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**THE NASA DIGITAL VGH PROGRAM -  
EXPLORATION OF METHODS AND FINAL RESULTS**

**Volume III - B 727 Data 1978-1980: 1765 HOURS**

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## FOREWORD

This report was prepared by Eagle Engineering, Inc., Hampton Division, under contract NASW 4430, sponsored by NASA Langley Research Center and the Federal Aviation Administration Technical Center under the FAA-NASA Interagency Agreement No. DTFA03-890-A-00019 of 13 June 1989. This report fulfills the requirement of the Program Plan for the National Aging Aircraft Research Program, DOT/FAA/CT-88/32, August 1989, Paragraph 2.3.2.1, Flight Loads.

The Eagle Engineering, Inc. effort was performed by Norman L. Crabill and administered under the direction of Joseph W. Stickle (NASA Langley Research Center) and Thomas DeFiore (FAA Technical Center).



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VOLUME III: B 727 Data 1978-1980: 1765 HOURS

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SUMMARY

Data obtained from the Digital Flight Data Recorder System of B 727 aircraft in 985 flights and 1765 hours of airline revenue operations are presented as an extension of the work documented in Volume I of this report. Data on conditions with flap deployment and autopilot use are given. In addition, acceleration statistics are presented from about 26 hours on nonrevenue flights. No discussion of the data is presented.

INTRODUCTION

This document presents the results of the NASA DVGH Program obtained during 1978-1980 operations of Boeing 727 aircraft. This Volume is an extension of the work and methods documented in Volume I. The data reduction analysis and methods and data presentation are essentially the same as those reported in Volume I. However, this report does contain additional data on autopilot usage and some limited acceleration-derived exceedance data obtained from nonrevenue flights.

## AIRCRAFT AND INSTRUMENTATION

### Aircraft

The aircraft type was the Boeing 727-200 with three Pratt and Whitney JT8D-15 turbofan engines. Characteristics of the aircraft used in the data reduction process are given in Table I; the configuration is shown in figure 1.

### Instrumentation

The data were obtained from the Digital Flight Data Recorder system described in Volume I. Measurements were:

<u>Parameter</u>	<u>Range and Units</u>	<u>Samples per Second</u>
$a_n + 1$	-3g to +6g	4
$a_y$	-1g to +1g	4
CAS	100 to 450 kts	1
HP	-1,000 to 50,000 ft	1
FLP	-5° to 60°	1
Autopilot Status	Off or Not-Off	Discrete
Cabin Pressure	0 to ~ 15 psia	1

Note that Spoiler data are not reported here, although they were in Volume I. Flap deflection (FLP) is for the inboard right trailing-edge flap as shown in figure 1. The cabin pressure data type is new, and was not available in the tests reported in Volumes I and II.



## SCOPE OF DATA

Data were collected from up to 20 aircraft operating in regular airline service over the service area, shown in figure 2, during 1978 through 1980: Almost all of the data (985 flights and 1765 hours) were obtained during passenger-carrying revenue service; a small amount (64 flights and 25.9 hours) was obtained during nonrevenue service (ferry flights mainly, although some training and maintenance flights may have been included). Due to operational difficulties, it was not practical to obtain continuous data from one aircraft as in Volumes I and II; it was therefore decided to obtain the data from any of the twenty 727-200 aircraft being operated by the airline over the service route during the 22 months of the test.

## DATA REDUCTION PROCESS

The Data Reduction Process is basically the same as described in Volume I. The filter used to separate maneuver and gust accelerations was similar to that described in Volume I except that the high limit of the band pass was set at 1.5 Hz based on an inspection of representative spectra. Although the results of reference 13 in Volume I indicate that the operation of the autopilot can cause up to a 20 percent reduction in the normal acceleration peak response to continuous turbulence, it was decided, after consultation with the industry, not to account for this in deriving  $U_{de}$ , in order to maintain comparability with the earlier VGH results, even though the autopilot status was being monitored.

## RESULTS

### Flight and Acceleration Derived Statistics

Presentation of Flight Profile Statistics results is as described in Volume II. Flight Profile Statistics are given in Percent of Time, and as Maximum Values on a Percent of Flight basis for Entire Flights (flaps up or down) and for Flaps Deflected. For operations reported in this volume, the conditions existing at flap retraction after lift-off, and the conditions existing at flap deflection before landing are given.

Acceleration Derived Statistics are also presented as in Volume I, except that with Flaps Deflected, the maximum  $a_n$  per flight and the Equivalent Airspeed occurring are presented for the various flap detents in take off and landing. Also new are level crossing counts for the Acceleration Derived quantities for non-revenue flights. All other results are for revenue flights. The Acceleration Derived quantities are subject to the same limitations discussed in Volume I, which indicates that the exceedances derived from the DFDR system at 4 samples per second may be significantly less than if actual peak values were counted.

The detailed Flight Profile and Acceleration Derived Statistics are given in figures 3 through 24, as shown in Table II. No discussion of the data is presented.

### Autopilot Usage and Effects

Autopilot status was monitored as off, or on, without regard to the exact on-mode for 223 hours of operations. The autopilot was on about 56 percent of the time; 23.7 percent of the time that

the autopilot was on, the low amplitude limit cycle in normal acceleration noted in Volumes I and II appeared. Its characteristics are summarized in figure 25. This phenomenon is believed to be due to off-nominal autopilot operation in the altitude-hold mode and is more fully discussed in Volumes I and II.

#### Cabin Pressure

Absolute cabin pressure was measured and used to compute the quantity "Maximum Differential Cabin Pressure per Flight" by using the measured absolute cabin pressure and the standard atmosphere based on the indicated pressure altitude. The distribution of this quantity as a function of the percent of flights is shown in figure 26.

#### CONCLUDING REMARKS

Data obtained from the Digital Flight Data Recorder system of B 727-200 aircraft in 985 flights and 1765 hours of airline revenue operations are presented as an extension of the work documented in Volume I of this report. Some new data on conditions with flap deployment and autopilot usage are given. In addition, acceleration statistics are presented from about 26 hours on nonrevenue flights. No general discussion of the data is presented.

TABLE I  
BOEING B 727 CHARACTERISTICS USED IN THE ANALYSIS

O Geometrical Characteristics

- o Wing Area = 1560 ft<sup>2</sup>
- o Wing Mean Chord = 15.06 ft

O Lift Curve Slope  $C_{L\alpha}$  per degree

- o Flaps up = f(M, HP)

- o Flaps down

<u>M</u>	<u>HP = 0</u>	<u>20 kft</u>	<u>40 kft</u>	<u>FLP, deg</u>	<u>HP <math>\approx</math> 0</u>
.2	.0980	.0980	.0980	0	.0980
.4	.0920	.0975	.1010	5	.1110
.5	.0890	.0965	.1025	10	.1150
.6	.0870	.0978	.1050	25 (TO)	.1167
.7	.0845	.0990	.1100	40 (LD)	.1056
.8	-	.1040	.1185		
.9	-	.1150	.1325		

- o Weight was computed linearly with time from takeoff to landing as described in Appendix C in Volume I.

TABLE II  
INDEX OF FLIGHT PROFILE AND ACCELERATION STATISTICS

FLIGHT PROFILE STATISTICS

o ENTIRE FLIGHTS

Figure Number	Subject	Page Numbers
3	Weight vs. Flight Duration	12-17
4	Altitudes and Gross Weights	18
5	Altitudes and Airspeeds	19-22
6	Altitude Summary	23
7	Maximum Altitudes	24-25

o FLAPS DEFLECTED

8	Flap Detent Use	26
9	Weights, Altitudes and Airspeeds	27-36
10	Flap Deflection Times	37-39
11	Equivalent Airspeeds and Detents	40
12	Flap Use above 10,000 ft	41

TABLE II (continued)  
ACCELERATION DERIVED STATISTICS

o ENTIRE FLIGHTS

Figure Number	Subject	Page Numbers
13	Normal Acceleration Exceedances	
(a)	$a_n$ matrix	42
(b)	$a_{nM}$ matrix	43
(c)	$a_{nG}$ matrix	44
(d)-(m)	$a_n$ , $a_{nM}$ , $a_{nG}$ plots	45-54
14	Lateral Acceleration Exceedances	
(a)	$a_y$ matrix	55
(b)-(k)	$a_y$ plots	56-65
15	$U_{de}$ Exceedances	
(a)	$U_{de}$ matrix	66
(b)-(k)	$U_{de}$ plots	67-76
16	Peak Positive and Negative $a_n$ vs. Altitude	
(a)	$a_n$ matrix	77
(b)-(k)	$a_n$ plots	78-87
17	Peak Positive and Negative $a_{nM}$ vs. Altitude	
(a)	$a_{nM}$ matrix	88
(b)-(k)	$a_{nM}$ plots	89-98
18	Peak Positive and Negative $a_{nG}$ vs. Altitude	
(a)	$a_{nG}$ matrix	99
(b)-(k)	$a_{nG}$ plots	100-109

# TABLE II (concluded)

19	Peak Positive and Negative $U_{de}$ vs. Altitude	
(a)	$U_{de}$ matrix	110
(b)-(k)	$U_{de}$ plots	111-120
o FLAPS DEFLECTED		
Figure Number	Subject	Page Numbers
20	$a_n$ Exceedances with Flaps Deflected	
(a)	Take Off Detents matrix	121
(b)	Take Off Detents plot	122
(c)	Landing Detents matrix	123
(d)	Landing Detents plot	124
21	Peak Positive and Negative $a_n$ per flight and EAS bands	
(a)-(d)	Take Off Detents	125-128
(e)-(j)	Landing Detents	129-134
o NON-REVENUE FLIGHTS		
Figure Number	Subject	Page Numbers
22	Normal Acceleration Exceedances	
(a)	$a_n$ matrix	135
(b)	$a_{rm}$ matrix	136
(c)	$a_{ng}$ matrix	137
(d)-(m)	$a_n$ , $a_{rm}$ , $a_{ng}$ plots	138-147
23	Lateral Acceleration Exceedances	
(a)	$a_y$ matrix	148
(b)-(k)	$a_y$ plots	149-158
24	$U_{de}$ Exceedances	
(a)	$U_{de}$ matrix	159
(b)-(k)	$U_{de}$ plots	160-169

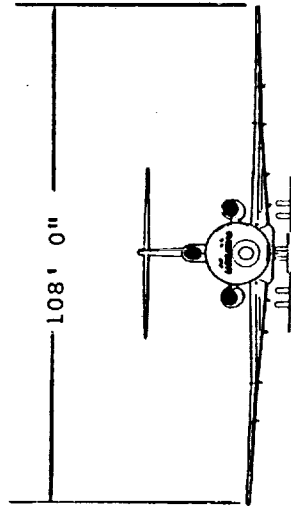
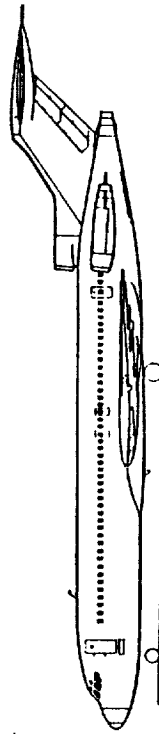
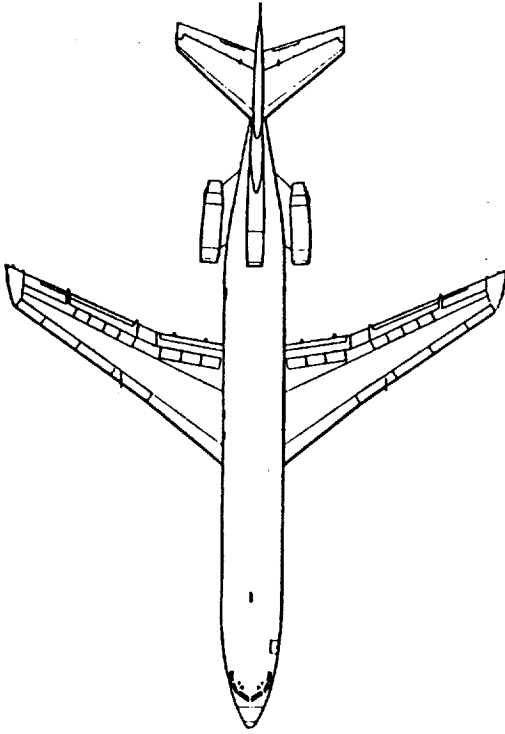
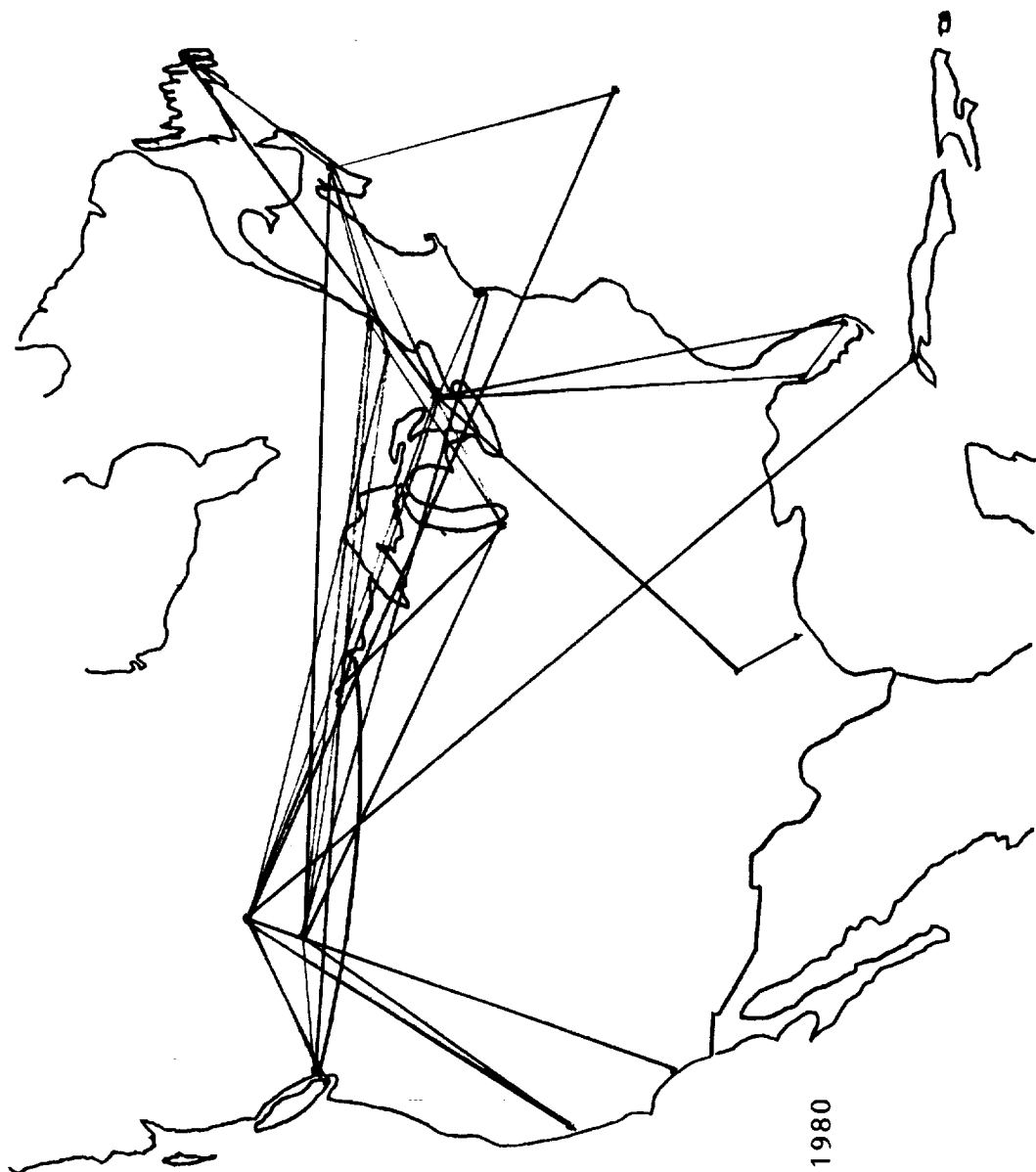


Figure 1.- Three view drawing of aircraft.





June 1978 - April 1980  
985 Flights  
1765 Hours  
723,033 N.Miles

Figure 2. - Location of service area and scope of data.

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OF POOR QUALITY

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS															
	110 TO 120 KLS	120 TO 130 KLS	130 TO 140 KLS	140 TO 150 KLS	150 TO 160 KLS	160 TO 170 KLS	170 TO 180 KLS	180 TO 190 KLS	190 TO 200 KLS	200 TO 210 KLS	210 TO 220 KLS	220 TO 230 KLS	230 TO 240 KLS	240 TO 250 KLS	250 TO 260 KLS	260 TO 270 KLS
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.8-1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.6-.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.5-.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.4-.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.3-.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.0-.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	0	3.5	16.3	23.0	24.3	19.9	10.2	2.3	0.5	0						

(a) Gross weight at take off

Figure 3.- Percent of flights, weights vs durations.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS															
	110 TO 120 KLS	120 TO 130 KLS	130 TO 140 KLS	140 TO 150 KLS	150 TO 160 KLS	160 TO 170 KLS	170 TO 180 KLS	180 TO 190 KLS	190 TO 200 KLS	200 TO 210 KLS						
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0	0.2	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0.1	0.1	0.4	0.9	0.2	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0	0.4	0.7	1.1	0.1	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0.1	0.1	2.9	2.3	0.2	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	0.1	2.5	5.6	6.2	0.9	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	0.1	2.1	5.5	5.3	0.8	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	0.3	2.4	5.5	4.7	1.4	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	0.6	4.4	8.2	5.2	1.0	0.1	0	0.1	0	0	0	0	0	0	0	0
.8-1.0	0.1	2.3	5.6	4.2	0.2	0	0	0	0	0	0	0	0	0	0	0
.6-.8	0.7	3.7	2.1	1.5	0	0	0	0	0	0	0	0	0	0	0	0
.5-.6	0.6	1.2	0.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.4-.5	0	0.8	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.3-.4	0	0.6	0.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0
.0-.3	0	0.2	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	2.7	21.2	39.3	31.7	4.9	0.1	0	0.1	0	0	0	0	0	0	0	0

(b) Gross weight at landing

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS													
	0 10 KRS	10 20 KRS	20 30 KRS	30 40 KRS	40 50 KRS	50 60 KRS	60 70 KRS	70 80 KRS	80 90 KRS	90 100 KRS	90 100 KRS	90 100 KRS	90 100 KRS	90 100 KRS
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0
4.5-5.0	0	0	0	0	0.1	0.4	0.2	0	0	0	0	0	0	0
4.0-4.5	0	0	0	0	0.3	1.0	0.4	0	0	0	0	0	0	0
3.5-4.0	0	0	0	0.1	1.5	0.6	0.1	0	0	0	0	0	0	0
3.0-3.5	0	0	0	0.8	4.7	0.2	0	0	0	0	0	0	0	0
2.5-3.0	0	0	0.4	8.4	5.6	0.7	0.2	0	0	0	0	0	0	0
2.0-2.5	0	0	1.9	9.5	1.8	0.5	0	0	0	0	0	0	0	0
1.5-2.0	0	0.1	8.3	4.6	1.2	0.1	0	0	0	0	0	0	0	0
1.0-1.5	0	4.7	11.5	3.5	0	0	0	0	0	0	0	0	0	0
.8-1.0	0	5.3	6.6	0.5	0	0	0	0	0	0	0	0	0	0
.6-.8	0	4.0	3.9	0.2	0	0	0	0	0	0	0	0	0	0
.5-.6	0	1.6	1.0	0	0	0	0	0	0	0	0	0	0	0
.4-.5	0	0.8	0.1	0	0	0	0	0	0	0	0	0	0	0
.3-.4	0	1.0	0.3	0.1	0	0	0	0	0	0	0	0	0	0
.0-.3	0	0.9	0.1	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	0	18.4	34.1	27.7	15.2	3.6	1.0	0	0	0	0	0	0	0

(c) Fuel weight at take off

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS															
	0 10 KLS	10 20 KLS	20 30 KLS	30 40 KLS	40 50 KLS	50 60 KLS	60 70 KLS	70 80 KLS	80 90 KLS	90 100 KLS	100 110 KLS	110 120 KLS	120 130 KLS	130 140 KLS	140 150 KLS	150 160 KLS
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0.3	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0.3	1.3	0.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0.7	1.4	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0.6	5.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	2.8	10.9	1.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	2.5	9.5	1.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	2.8	9.8	1.4	0.2	0	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	6.0	11.7	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0
.8-1.0	4.2	7.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0
.6-.8	1.4	6.2	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0
.5-.6	1.0	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.4-.5	0.3	0.5	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
.3-.4	0.1	1.2	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
.0-.3	0.3	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	23.5	68.1	7.6	0.8	0	0	0	0	0	0	0	0	0	0	0	0

(d) Fuel weight at landing

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS														TOTAL PERCENT ALL FLIGHTS
	0 5 KLS	5 10 KLS	10 15 KLS	15 20 KLS	20 25 KLS	25 30 KLS	30 35 KLS	35 40 KLS	40 45 KLS	45 50 KLS	45 50 KLS	45 50 KLS	45 50 KLS	45 50 KLS	
6.5-7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.0-6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.0-5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.0-4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5-4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.0-3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5-3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.0-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.5-2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.0-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.8-1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.6-.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.5-.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.4-.5	0.7	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
.3-.4	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.0-.3	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL PERCENT ALL FLIGHTS	3.1	27.8	18.6	13.9	17.3	12.1	3.4	1.4	1.9	0.5					

(e) Fuel burn vs flight duration

Figure 3.- Continued.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS													
	0 TO 5 KLS	5 TO 10 KLS	10 TO 15 KLS	15 TO 20 KLS	20 TO 25 KLS	25 TO 30 KLS	30 TO 35 KLS	35 TO 40 KLS	40 TO 45 KLS	45 TO 50 KLS				
6.5-7.0	0	0	0	0	0	0	0	0	0	0				
6.0-6.5	0	0	0	0	0	0	0	0	0	0				
5.5-6.0	0	0	0	0	0	0	0	0	0	0				
5.0-5.5	0	0	0.1	0	0	0	0	0	0	0				
4.5-5.0	0	0.2	0.1	0.2	0.2	0	0	0	0	0				
4.0-4.5	0.1	0.1	0.1	0.1	0.5	0	0	0	0	0				
3.5-4.0	0	0.3	0.2	0.4	0.6	0.8	0	0	0	0				
3.0-3.5	0.1	0.1	1.0	1.2	1.6	1.4	0.2	0	0	0				
2.5-3.0	0.1	1.4	3.5	3.7	2.9	2.9	0.8	0	0	0				
2.0-2.5	0.4	1.1	2.0	3.7	3.2	3.0	0.3	0	0	0				
1.5-2.0	0.4	1.3	3.2	2.9	2.5	3.5	0.4	0	0	0				
1.0-1.5	0.5	1.9	4.0	4.7	4.3	3.9	0.2	0	0	0.2				
.8-1.0	0.2	1.1	2.2	2.8	2.8	3.0	0.1	0	0	0				
.6-8	1.5	2.4	1.8	0.6	0.7	0.8	0.1	0	0	0				
.5-.6	0.4	1.1	0.4	0.5	0.2	0	0	0	0	0				
.4-.5	0	0.4	0.5	0	0	0	0	0	0	0				
.3-.4	0.1	0.3	0.8	0.2	0	0	0	0	0	0				
.0-.3	0	0.1	0.5	0.2	0.2	0	0	0	0	0				
TOTAL PERCENT ALL FLIGHTS	3.9	12.0	20.5	21.2	19.9	20.2	2.1	0	0	0.2				

(f) Payload weight vs flight duration

Figure 3.- Continued.

PRESSURE ALTITUDE BANDS												
GROSS WEIGHT KILAS	-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT		
***CLIMB***												
110-120	0	0	0.0010	0.0019	0.0018	0.0019	0.0063	0.0039	0.0027	0.0194		
120-130	0.0465	0.0577	0.0857	0.0795	0.1009	0.0791	0.0416	0.0482	0	0.5392		
130-140	0.2202	0.2708	0.3546	0.3144	0.3859	0.3245	0.3332	0.2751	0	2.4787		
140-150	0.3102	0.4024	0.5463	0.5024	0.6175	0.6682	0.8287	0.4364	0	4.3120		
150-160	0.3400	0.4355	0.5773	0.5539	0.6737	0.7399	1.0099	0.3211	0	4.6513		
160-170	0.2963	0.3913	0.5203	0.4823	0.6159	0.6686	0.9154	0.1230	0	4.0131		
170-180	0.1457	0.2086	0.2644	0.2476	0.2767	0.2824	0.2558	0.0082	0	1.6894		
180-190	0.0367	0.0551	0.0646	0.0538	0.0611	0.0690	0.0481	0.0029	0	0.3913		
190-200	0.0094	0.0093	0.0148	0.0110	0.0130	0.0062	0.0025	0	0	0.0662		
200-210	0	0	0	0	0	0	0	0	0	0		
PERCENT TOTAL TIME =												
AVE GROSS WEIGHT IN ALTITUDE BAND	1.4051	1.8306	2.4289	2.2467	2.7464	2.8397	3.4416	1.2188	0.0027	18.1607		
		154.42	154.12	154.14	153.93	154.66	154.81	146.81	115.00			
***LEVEL***												
110-120	0.0016	0.0144	0.0206	0.0019	0.0038	0.0006	0.0420	0.1376	0.0155	0.2379		
120-130	0.0595	0.0504	0.1365	0.0200	0.0760	0.2034	0.2281	1.4587	0.0001	2.2328		
130-140	0.1620	0.1488	0.2217	0.0198	0.1446	0.6966	1.3455	7.9540	0	10.6928		
140-150	0.1294	0.1413	0.1740	0.0590	0.1249	0.8922	4.8961	13.7972	0	20.2143		
150-160	0.0358	0.0268	0.0578	0.0274	0.0763	0.6961	8.4492	9.6020	0	18.9614		
160-170	0	0.0013	0	0	0.0031	0.3615	5.6321	2.7331	0	8.7312		
170-180	0	0.0040	0.0019	0	0	0.0757	2.1943	0.0716	0	2.3474		
180-190	0	0	0	0	0	0.0409	0.2074	0.0203	0	0.2686		
190-200	0	0	0	0	0	0	0.0020	0	0	0.0020		
200-210	0	0	0	0	0	0	0	0	0	0		
PERCENT TOTAL TIME =												
AVE GROSS WEIGHT IN ALTITUDE BAND	0.3884	0.3870	0.6125	0.1282	0.4287	2.9570	22.9968	35.7745	0.0156	63.6885		
		138.50	136.95	142.03	139.74	147.35	155.96	146.14	115.08			
***DESCENT***												
110-120	0.0943	0.0666	0.0432	0.0217	0.0160	0.0113	0.0095	0.0050	0.0005	0.2679		
120-130	0.8297	0.6679	0.4520	0.2731	0.2448	0.1649	0.1188	0.0583	0	2.8096		
130-140	1.5349	1.4288	1.0561	0.6545	0.6110	0.5597	0.4932	0.1905	0	6.5287		
140-150	1.3454	1.3249	1.0466	0.7116	0.7032	0.6953	0.6334	0.2270	0	6.6875		
150-160	0.2115	0.2618	0.2491	0.1874	0.1990	0.2486	0.3061	0.1032	0	1.7667		
160-170	0.0057	0.0041	0.0032	0.0025	0.0027	0.0138	0.0353	0.0040	0	0.0713		
170-180	0	0	0	0	0	0.0012	0.0013	0	0	0.0025		
180-190	0.0024	0.0040	0.0028	0.0016	0.0019	0.0017	0.0015	0.0007	0	0.0167		
190-200	0	0	0	0	0	0	0	0	0	0		
200-210	0	0	0	0	0	0	0	0	0	0		
PERCENT TOTAL TIME =												
AVE GROSS WEIGHT IN ALTITUDE BAND	4.0239	3.7581	2.8529	1.8525	1.7786	1.6965	1.5981	0.5887	0.0005	18.1509		
		137.87	136.61	139.24	139.73	141.25	142.67	141.47	115.00			
PERCENT TIME =												
HOURS IN ALTITUDE & CLIMB (LEVEL, DESCENT) & GROSS WEIGHT BANDS												
										TOTAL FLIGHTS	985.00	
										TOTAL TIME	1765.59	
										TOTAL ALTITUDE	725033.26	

Figure 4.- Percent time in altitude and gross weight bands.



PRESSURE ALTITUDE BANDS																					
CAS INTERVAL, KTS		-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT										
120-130	0.0002		0	0	0	0	0	0	0	0	0.0002										
130-140	0.0004		0	0	0	0	0	0	0	0	0.0004										
140-150	0.0056		0	0	0	0	0	0	0	0	0.0060										
150-160	0.0451		0.0034	0	0	0	0	0	0	0	0.0484										
160-170	0.1278		0.0120	0	0	0	0	0	0	0	0.1397										
170-180	0.1696		0.0205	0	0	0	0	0	0	0	0.1900										
180-190	0.1774		0.0347	0	0	0	0	0	0	0	0.2121										
190-200	0.1824		0.0472	0.0005	0	0	0	0	0	0	0.2301										
200-210	0.1780		0.0669	0.0022	0	0	0	0	0	0	0.2471										
210-220	0.1646		0.1005	0.0070	0.0003	0	0	0	0	0.0016	0.2741										
220-230	0.1372		0.1628	0.0203	0.0023	0	0	0	0.0265	0.0011	0.3502										
230-240	0.1195		0.4429	0.0993	0.0083	0.0014	0.0012	0.0048	0.1594	0	0.8368										
240-250	0.0779		0.6892	0.2615	0.0086	0.0034	0.0045	0.0957	0.4635	0	1.6043										
250-260	0.0175		0.2002	0.2411	0.0179	0.0159	0.0108	0.6481	0.3955	0	1.5469										
260-270	0.0014		0.0363	0.2479	0.0760	0.0695	0.1077	1.1295	0.1665	0	1.8349										
270-280	0.0006		0.0099	0.2646	0.1257	0.1251	0.2039	1.0736	0.0075	0	1.8108										
280-290	0		0.0026	0.2559	0.1344	0.1736	0.6961	0.4087	0	0	1.6712										
290-300	0		0.0009	0.2987	0.2662	0.3410	0.8821	0.0736	0	0	1.8626										
300-310	0		0.0002	0.4607	1.0466	1.4497	0.7880	0.0076	0	0	3.7527										
310-320	0		0	0.2223	0.4877	0.5031	0.1225	0.0001	0	0	1.3358										
320-330	0		0	0.0302	0.0526	0.0489	0.0196	0	0	0	0.1513										
330-340	0		0	0.0096	0.0133	0.0140	0.0028	0	0	0	0.0398										
340-350	0		0	0.0044	0.0032	0.0006	0.0005	0	0	0	0.0087										
350-360	0		0	0.0011	0.0019	0.0002	0	0	0	0	0.0031										
360-370	0		0	0.0008	0.0015	0	0	0	0	0	0.0024										
370-380	0		0	0.0009	0.0001	0	0	0	0	0	0.0010										
380-390	0		0	0	0	0	0	0	0	0	0										
390-400	0		0	0	0	0	0	0	0	0	0										
AV CAS	200.6517	235.5087	280.4137	301.5625	302.0673	293.6124	268.7446	249.4190	219.0588												
TOTAL HOURS																					
IN ALT & CLIMB	24.8090	32.3214	42.8851	39.6678	48.4908	50.1376	60.7642	21.5194	0.0472	320.6426											
PERCENT TIME																					
IN ALT & CLIMB	1.4051	1.8306	2.4289	2.2467	2.7464	2.8397	3.4416	1.2188	0.0027	18.1607	985										
											TOTAL FLIGHTS										
											TOTAL HOURS										
											1765										

(a) Climb

Figure 5. - Percent time in altitude and airspeed bands.

# PRESSURE ALTITUDE BANDS

CAS INTERVAL, KTS	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	4500 FT	-500 FT	9500 FT	4500 FT	14500 FT	9500 FT	19500 FT	14500 FT	24500 FT	19500 FT	29500 FT	24500 FT	34500 FT	29500 FT	39500 FT	34500 FT	44500 FT	39500 FT	-500 FT	
120-130	0.0013	0.0013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0013	
130-140	0.0061	0.0061	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0069	
140-150	0.0241	0.0241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0303	
150-160	0.0879	0.0879	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1178	
160-170	0.0774	0.0774	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1073	
170-180	0.0647	0.0647	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0832	
180-190	0.0411	0.0411	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0590	
190-200	0.0200	0.0200	0.0178	0	0	0.0097	0	0.0004	0	0	0	0	0	0	0	0	0	0	0.0480	
200-210	0.0241	0.0241	0.0408	0	0.0005	0.0547	0.0091	0.0039	0.0092	0.0082	0	0	0	0.0002	0.0002	0	0	0	0.0926	
210-220	0.0120	0.0120	0.0254	0.0023	0.0023	0.0321	0.0031	0.0092	0.0092	0.0082	0	0	0	0.0089	0.0089	0	0	0	0.1439	
220-230	0.0112	0.0112	0.0288	0.0245	0.0012	0.0245	0.0061	0.0098	0.0098	0.0257	0.0278	0.0278	0.0257	0.0064	0.0064	0	0	0	0.8111	
230-240	0.0067	0.0067	0.0684	0.0721	0.0019	0.0721	0.0085	0.0135	0.0135	0.0549	4.3488	4.3488	0.0549	0.0001	0.0001	0	0	0	4.6288	
240-250	0.0069	0.0069	0.0714	0.1110	0.0139	0.1110	0.0138	0.0139	0.0138	0.0097	11.3550	11.3550	0.0571	0	0	0	0	0	11.5025	
250-260	0.0015	0.0015	0.0222	0.0449	0.0065	0.0449	0.0056	0.0065	0.0056	1.6382	18.5794	18.5794	1.6382	0	0	0	0	0	20.3212	
260-270	0.0034	0.0034	0.0034	0.0320	0.0030	0.0320	0.0062	0.0030	0.0062	0.0770	0.8930	0.8930	0.0770	0	0	0	0	0	14.4106	
270-280	0	0	0.0020	0.0377	0.0104	0.0377	0.0177	0.0104	0.0177	0.1146	6.1669	6.1669	0.1146	0	0	0	0	0	6.3514	
280-290	0	0	0.0022	0.0408	0.0144	0.0408	0.0277	0.0144	0.0277	0.6715	1.5629	1.5629	0.6715	0	0	0	0	0	2.3176	
290-300	0	0	0.0003	0.0297	0.0134	0.0297	0.0183	0.0134	0.0183	0.9765	0.0303	0.0303	0.9765	0	0	0	0	0	1.0685	
300-310	0	0	0.0002	0.0001	0.0273	0.0273	0.0391	0.0273	0.0391	0.6106	0	0	0	0	0	0	0	0	0.6978	
310-320	0	0	0.0001	0.0207	0.0076	0.0207	0.0951	0.0076	0.0951	0.3585	0	0	0	0	0	0	0	0	0.4844	
320-330	0	0	0.0001	0.0230	0.0076	0.0230	0.0951	0.0076	0.0951	0.3585	0	0	0	0	0	0	0	0	0.2085	
330-340	0	0	0.0001	0.0265	0.0080	0.0265	0.1459	0.0080	0.1459	0.0280	0	0	0	0	0	0	0	0	0.0423	
340-350	0	0	0.0001	0.0139	0.0072	0.0139	0.0205	0.0072	0.0205	0.0006	0	0	0	0	0	0	0	0	0.0129	
350-360	0	0	0.0001	0.0077	0.0012	0.0077	0.0038	0.0012	0.0038	0	0	0	0	0	0	0	0	0	0.0051	
360-370	0	0	0.0002	0.0009	0.0040	0.0009	0	0.0040	0	0	0	0	0	0	0	0	0	0	0.0023	
370-380	0	0	0	0	0.0023	0	0	0.0023	0	0	0	0	0	0	0	0	0	0	0	
380-390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
390-400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
AV CAS	175.8187	213.5582	262.1649	298.7830	312.3425	303.6620	278.0729	259.1361	229.1230											
TOTAL HOURS	6.8567	6.8322	10.8145	2.2631	7.5682	52.2079	406.0278	631.6297	0.2756	1124.4756										
ALT. & LEVEL																				
PERCENT TIME	0.3884	0.3870	0.6125	0.1282	0.4287	2.9570	22.9968	35.7745	0.0156	63.6885										
IN ALT & LEVEL																				
TOTAL FLIGHTS																			985	
TOTAL HOURS																			1765	

(b) Level

Figure 5.- Continued.

PRESSURE ALTITUDE BANDS																					
		-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT										
CAS INTERVAL, KTS	120-130	0.1953	0.0089	0	0	0	0	0	0	0	0.2042										
	130-140	0.8450	0.0482	0	0	0	0	0	0	0	0.8931										
	140-150	0.6169	0.0593	0	0	0	0	0	0	0	0.6762										
	150-160	0.5573	0.1088	0.0003	0	0	0	0	0	0	0.6664										
	160-170	0.4565	0.1384	0.0006	0	0	0	0	0	0	0.5955										
	170-180	0.3527	0.1741	0.0031	0	0	0	0	0	0	0.5300										
	180-190	0.2277	0.1439	0.0048	0	0	0	0	0	0	0.3763										
	190-200	0.1869	0.1699	0.0134	0	0	0	0	0	0	0.3702										
	200-210	0.1724	0.3059	0.0609	0.0073	0	0	0	0	0	0.5473										
	210-220	0.1291	0.2309	0.0244	0.0080	0.0037	0	0	0	0	0.3960										
	220-230	0.1115	0.3110	0.0320	0.0072	0.0074	0.0062	0.0066	0	0	0.4821										
	230-240	0.0988	0.7438	0.1566	0.0253	0.0073	0.0103	0.0046	0.0067	0.0001	1.0535										
	240-250	0.0605	1.0389	0.3569	0.0457	0.0181	0.0108	0.0111	0.0484	0.0004	1.5917										
	250-260	0.0103	0.2111	0.2427	0.0226	0.0146	0.0129	0.0418	0.1907	0	0.7467										
	260-270	0.0013	0.0316	0.2185	0.0322	0.0173	0.0185	0.2344	0.3202	0	0.8740										
	270-280	0.0016	0.0115	0.2873	0.0931	0.0764	0.0596	0.5989	0.0218	0	1.1501										
	280-290	0.0002	0.0102	0.5489	0.4616	0.4140	0.4444	0.4885	0.0003	0	2.3681										
290-300	0	0.0038	0.4628	0.6526	0.7040	0.7109	0.1876	0	0	2.7217											
300-310	0	0.0024	0.1636	0.2200	0.2136	0.2552	0.0224	0	0	0.8773											
310-320	0	0.0020	0.0674	0.0754	0.0888	0.1106	0.0036	0	0	0.3479											
320-330	0	0.0011	0.0788	0.0757	0.1049	0.0429	0	0	0	0.3034											
330-340	0	0.0014	0.0665	0.0702	0.0653	0.0119	0	0	0	0.2154											
340-350	0	0.0001	0.0247	0.0233	0.0261	0.0023	0	0	0	0.0764											
350-360	0	0	0.0136	0.0114	0.0098	0	0	0	0	0.0349											
360-370	0	0.0001	0	0.0173	0.0112	0	0	0	0	0.0337											
370-380	0	0	0.0076	0.0094	0.0013	0	0	0	0	0.0183											
380-390	0	0	0	0.0002	0.0005	0	0	0	0	0.0007											
390-400	0	0	0	0	0	0	0	0	0	0											
AV CAS	163.9242	220.7603	275.7677	294.0602	296.7056	294.0248	278.4078	260.1140	243.3333												
TOTAL HOURS IN ALT BAND	71.0449	66.3527	50.3701	32.7079	31.4031	29.9538	28.2339	10.3947	0.0083	320.4695											
TOTAL HOURS IN ALT BAND	4.0239	3.7581	2.8529	1.8525	1.7786	1.6965	1.5991	0.5887	0.0005	18.1509											
											TOTAL FLIGHTS	985									
											TOTAL HOURS	1765									

(c) Descent

Figure 5.- Continued.



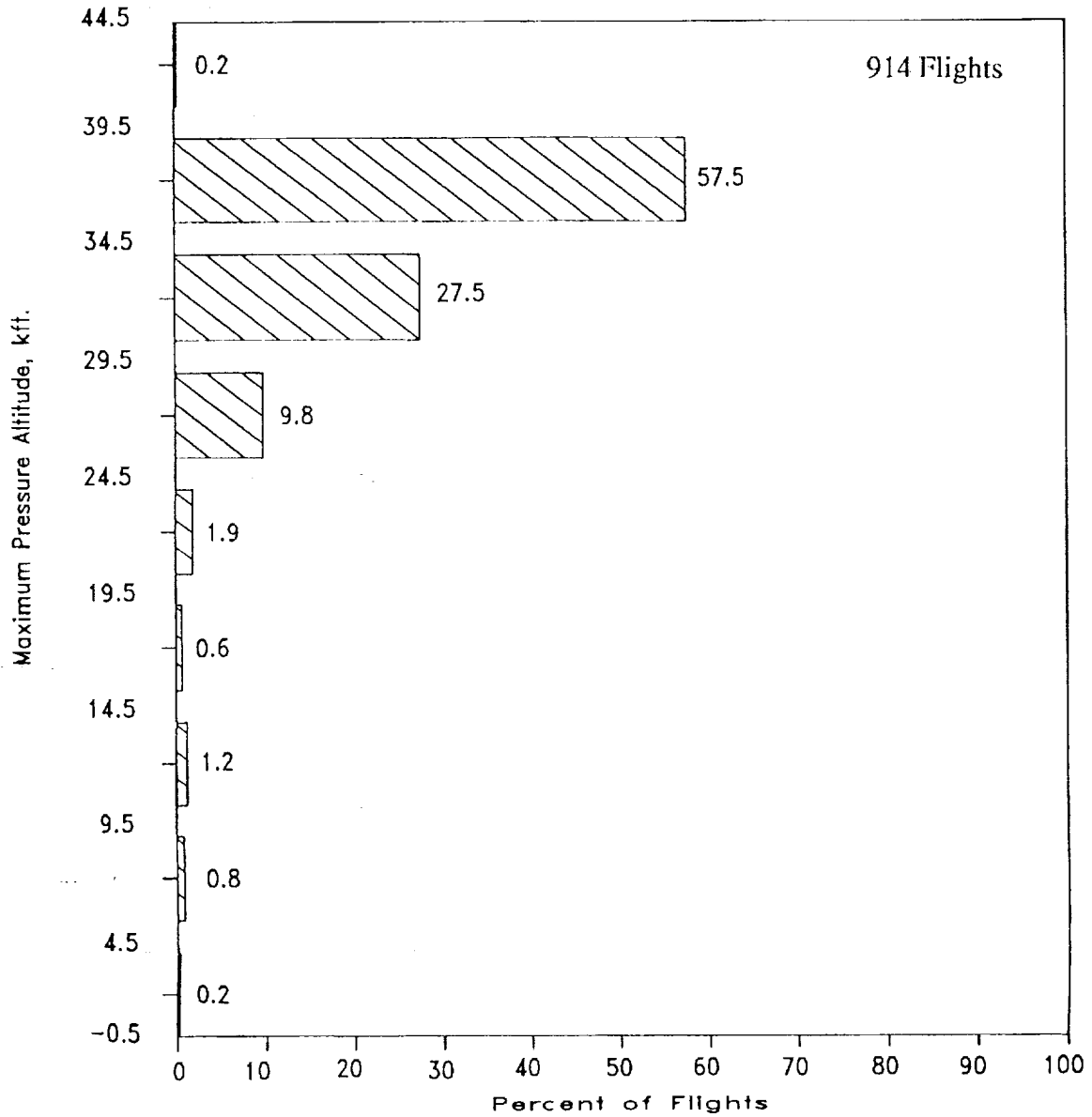
		PRESSURE ALTITUDE BANDS									
TIME INTERVAL, HRS IN ALTITUDE BAND		-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	
6.50-7.00	0	0	0	0	0	0	0	0	0	0	
6.00-6.50	0	0	0	0	0	0	0	0	0	0	
5.50-6.00	0	0	0	0	0	0	0	0	0	0	
5.00-5.50	0	0	0	0	0	0	0	0	0	0	
4.50-5.00	0	0	0	0	0	0	0	0	0	0	
4.00-4.50	0	0	0	0	0	0	0	0	0	0	
3.50-4.00	0	0	0	0	0	0	0	0.203	0.102	0	
3.00-3.50	0	0	0	0	0	0	0	0.711	0.406	0	
2.50-3.00	0	0	0	0	0	0.102	0.102	1.929	1.320	0	
2.00-2.50	0	0	0	0	0	0.305	0.305	3.147	5.787	0	
1.50-2.00	0	0	0	0	0	0.305	0.305	4.975	11.168	0	
1.00-1.50	0	0	0	0	0	0.609	0.609	7.716	11.777	0	
.90-1.00	0	0	0	0	0	0.406	0.406	1.929	2.741	0	
.80-.90	0	0	0	0	0.102	0.102	0.102	2.030	2.944	0	
.70-.80	0	0	0	0	0	0.203	0.203	2.335	2.437	0	
.60-.70	0	0	0	0	0	0.406	0.406	1.827	2.234	0	
.50-.60	0	0	0.102	0	0	0.406	0.406	2.944	3.756	0	
.45-.50	0	0	0	0	0	0.609	0.609	1.827	2.234	0	
.40-.45	0.102	0	0.102	0.102	0.203	0.203	0.203	1.218	3.249	0	
.35-.40	0	0	0.102	0	0.203	0.203	0.305	2.030	2.234	0	
.30-.35	0	0	0	0	0.203	0.203	1.929	2.538	0.609	0.102	
.25-.30	0.305	0.203	0.406	0.305	0.203	0.203	1.827	2.843	1.624	0	
.20-.25	1.015	0.812	1.218	0.406	1.320	2.132	3.756	1.320	1.320	0	
.15-.20	7.817	9.543	7.716	0.711	3.046	7.614	2.640	1.117	1.117	0	
.10-.15	46.294	41.827	36.447	6.497	14.518	16.548	15.635	0.305	0.305	0	
.05-.10	35.939	47.005	52.893	87.107	76.650	60.508	22.944	0.203	0.203	0	
.00-.05	8.528	0.305	0	2.538	0.711	0.711	0.203	0.203	0.203	0.102	
TOTAL HOURS IN ALT BAND	102.7106	105.5062	104.0697	74.6388	87.4622	132.2994	495.0259	663.5437	0.3311		
TOTAL PERCENT TIME IN ALT BAND	5.8174	5.9757	5.8943	4.2274	4.9537	7.4932	28.0375	37.5820	0.0188		

Figure 6.- Percent of flights vs time in altitude bands.

DURATION OF FLIGHT, HOURS	PERCENT OF FLIGHTS									
	-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	
6.5-7.0	0	0	0	0	0	0	0	0	0	
6.0-6.5	0	0	0	0	0	0	0	0	0	
5.5-6.0	0	0	0	0	0	0	0	0	0	
5.0-5.5	0	0	0	0	0	0	0	0.1	0	
4.5-5.0	0	0	0	0	0	0	0	0.7	0	
4.0-4.5	0	0	0	0	0	0	0.7	1.0	0	
3.5-4.0	0	0	0	0	0	0	0.4	1.9	0	
3.0-3.5	0	0	0	0	0	0	2.2	3.5	0	
2.5-3.0	0	0	0	0	0	0.1	3.8	11.5	0	
2.0-2.5	0	0	0	0	0.2	0.2	3.4	10.2	0.1	
1.5-2.0	0	0	0	0	0	0	3.7	10.7	0	
1.0-1.5	0	0	0	0	0	0.5	6.7	12.3	0.1	
.8-1.0	0	0	0	0	0.1	1.1	5.5	5.7	0	
.6-.8	0	0	0	0.1	0.6	6.1	1.0	0.2	0	
.5-.6	0	0	0	0	0.7	1.8	0.1	0	0	
.4-.5	0	0	0.3	0.2	0.3	0	0.1	0	0	
.3-.4	0	0	0.9	0.3	0.2	0	0	0	0	
.0-.3	0.2	0.8	0	0	0	0	0	0	0	
TOTAL PERCENT ALL FLIGHTS	0.2	0.8	1.2	0.6	1.9	9.8	27.5	57.7	0.2	

(a) Maximum altitude vs flight duration matrix

Figure 7.- Percent of flights to maximum altitude.



(b) Percent of flights to maximum pressure altitude per flight : Plot.

Figure 7.- Concluded.

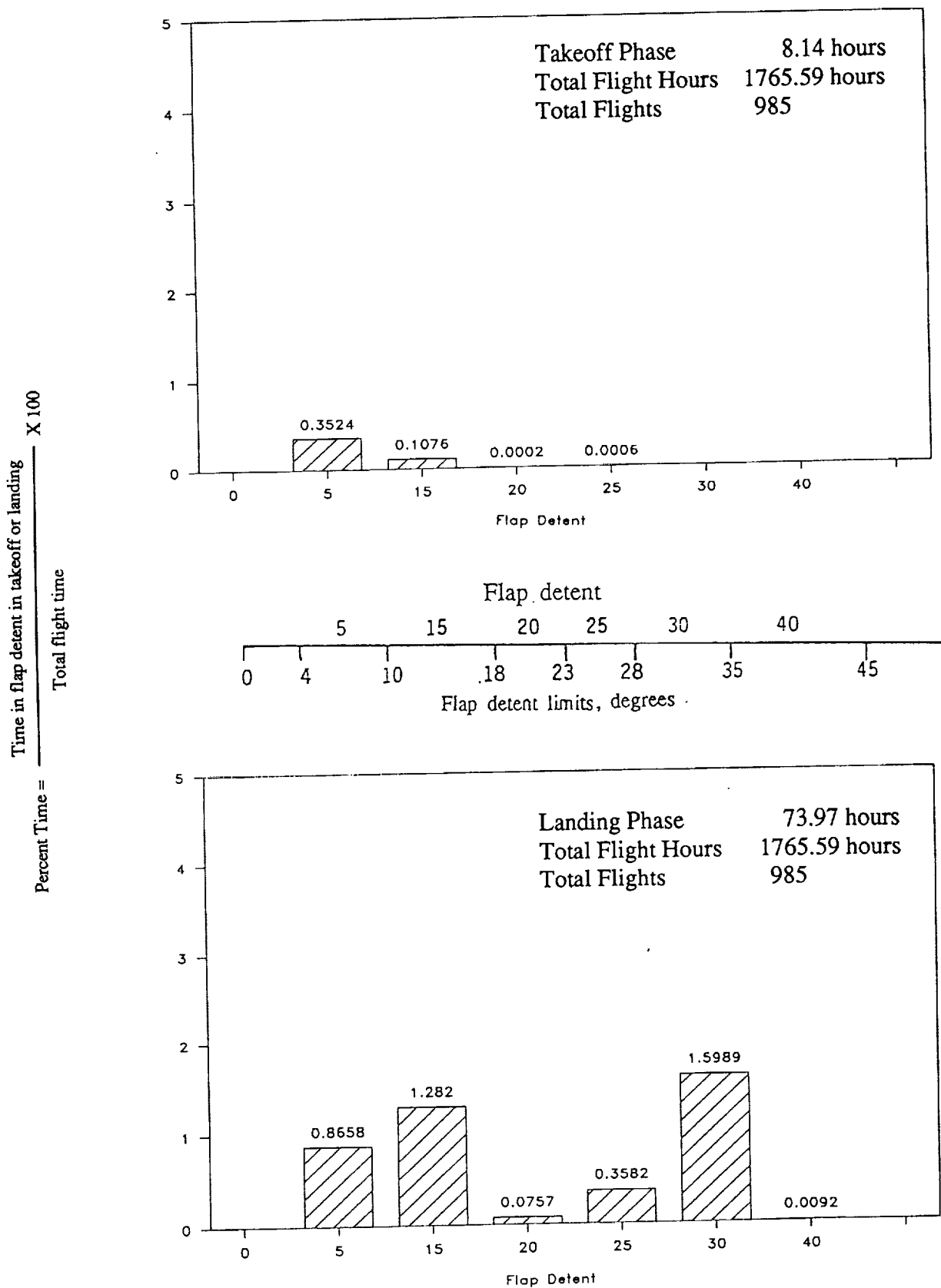
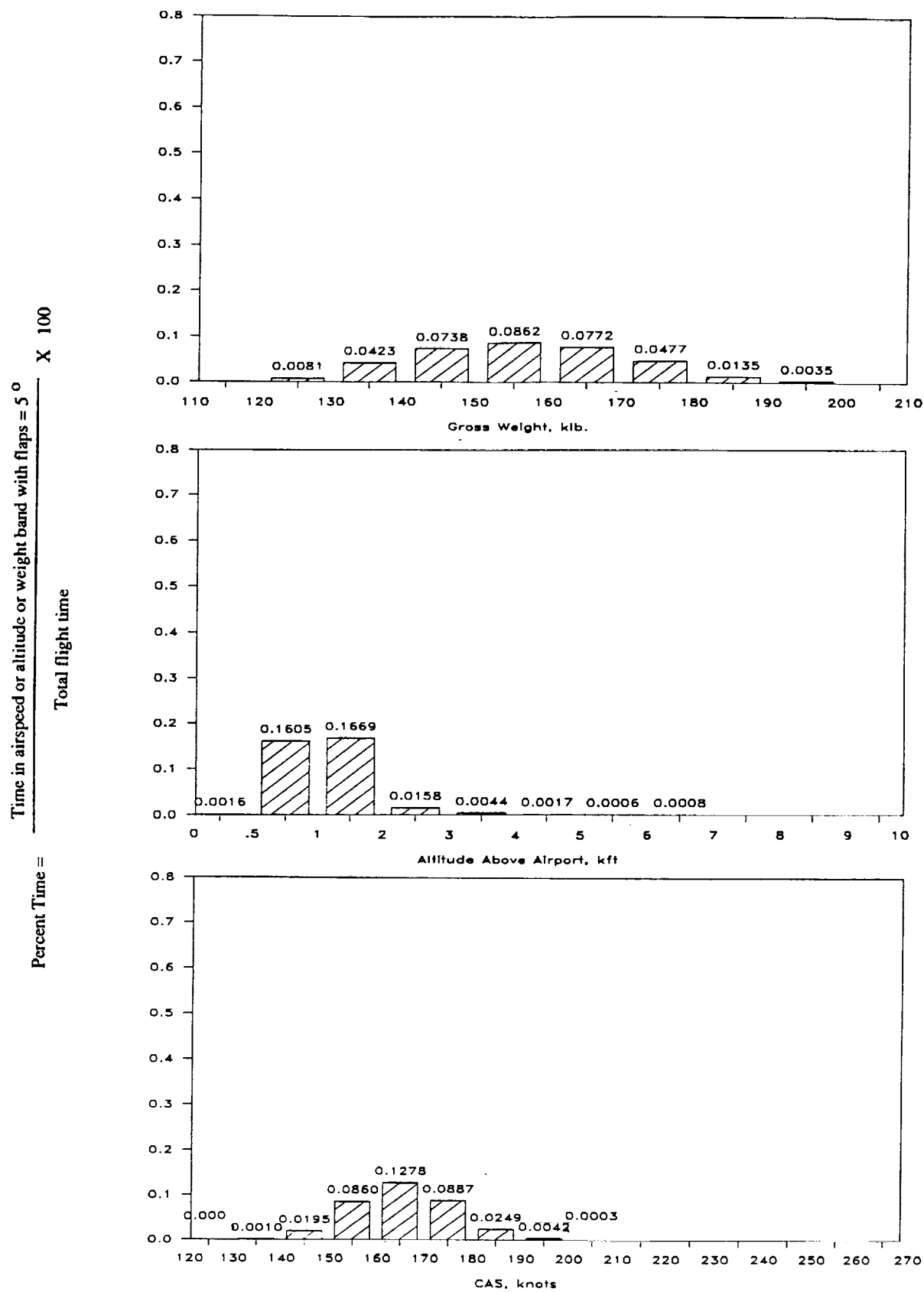


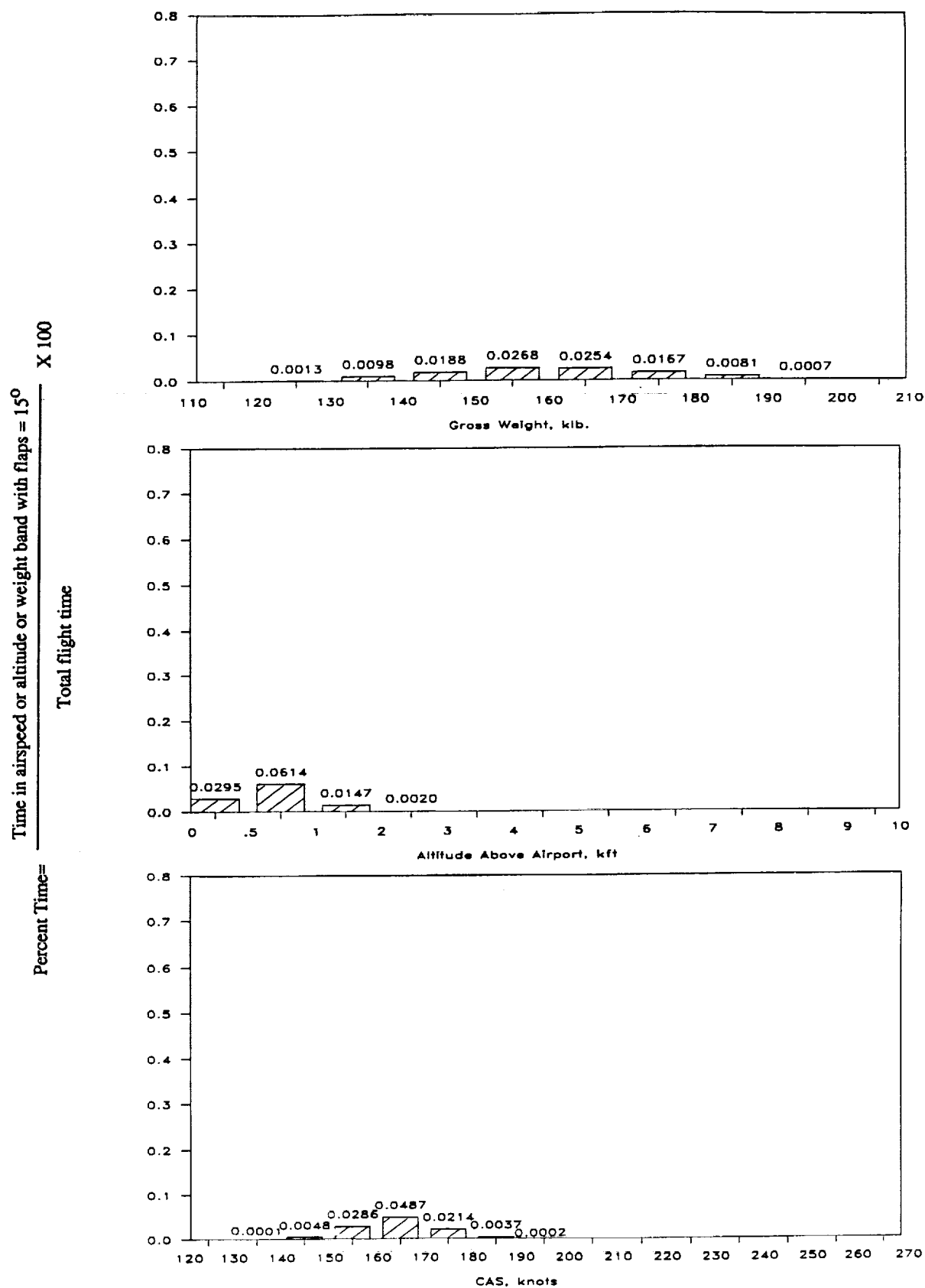
Figure 8.- Percent of total flight time at each flap detent.





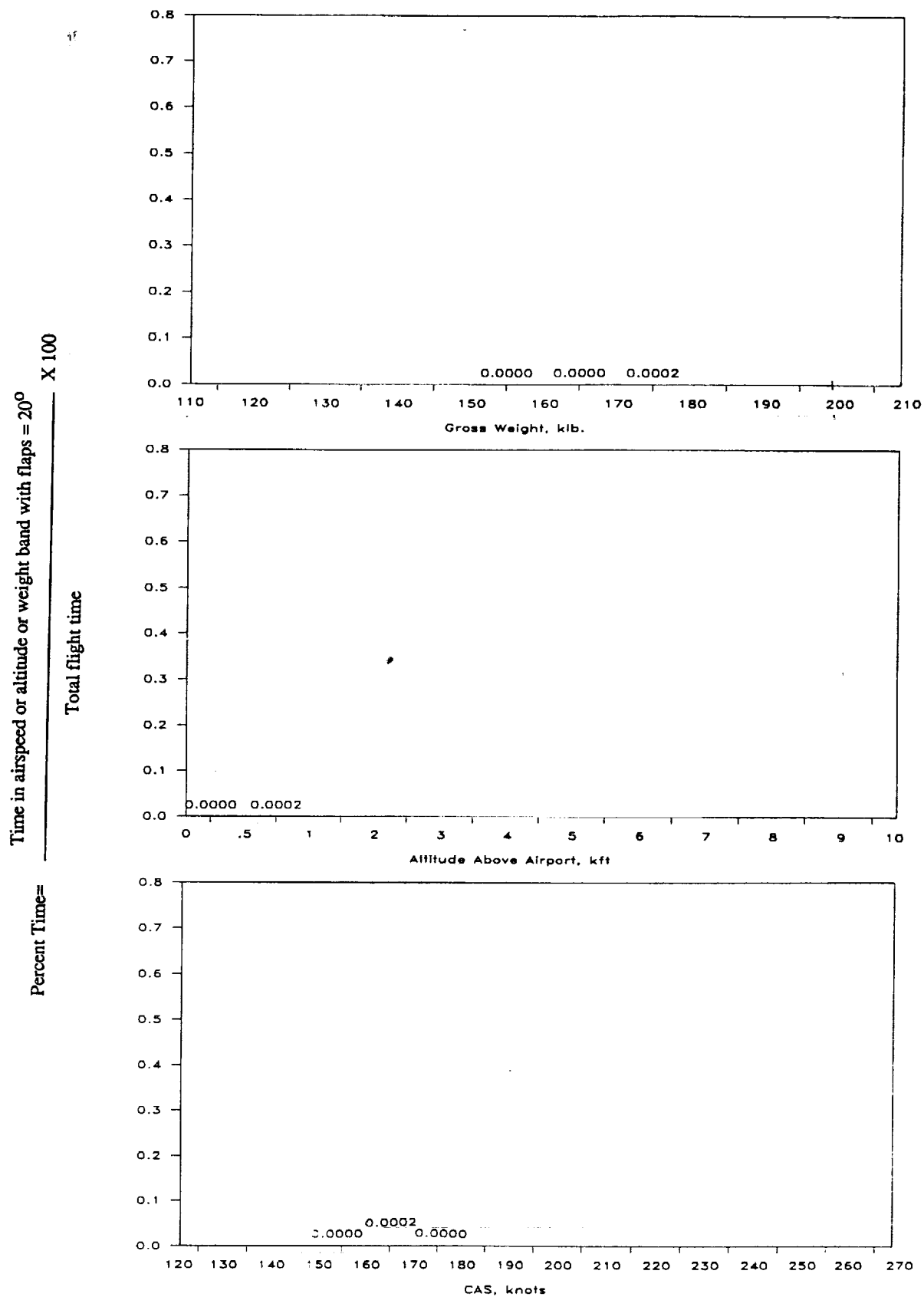
(a) Takeoff, flaps=5°; 6.2223 hours

Figure 9.- Gross weight, altitude above airport, and airspeed time distributions.



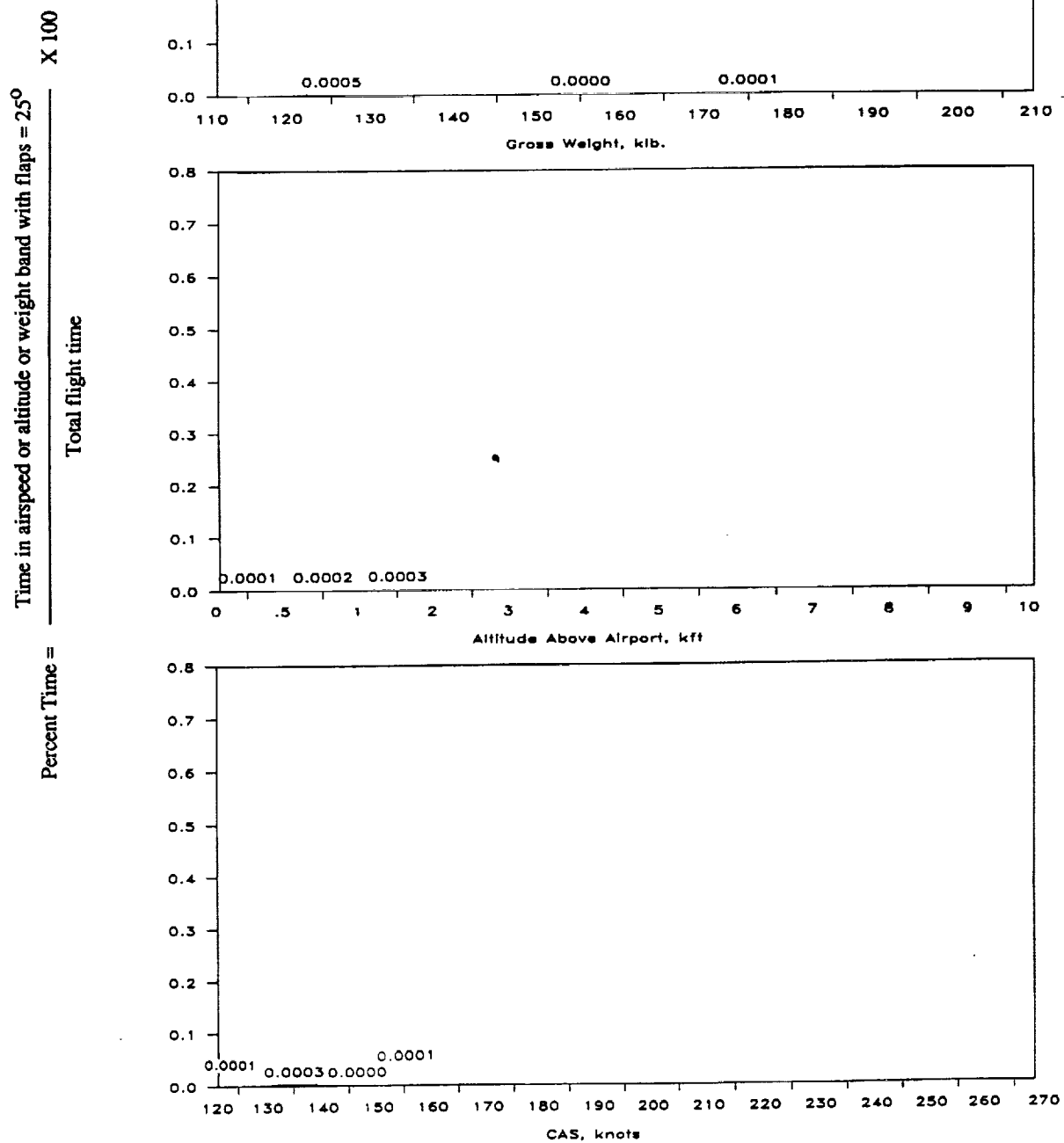
(b) Takeoff, flaps=15°; 1.8993 hours

Figure 9.- Continued.



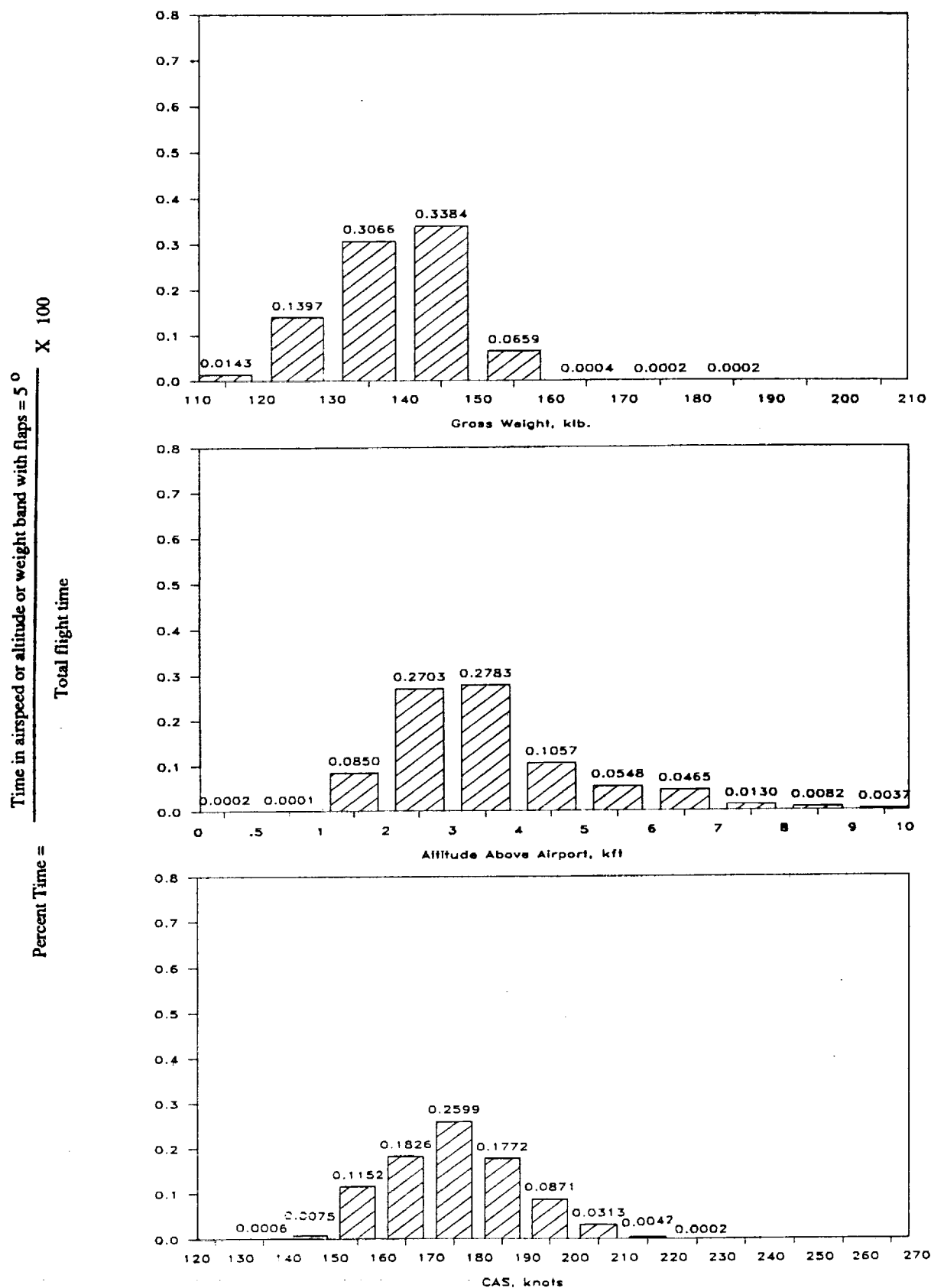
(c) Takeoff, flaps=20°; 0.0033 hours

Figure 9.- Continued.

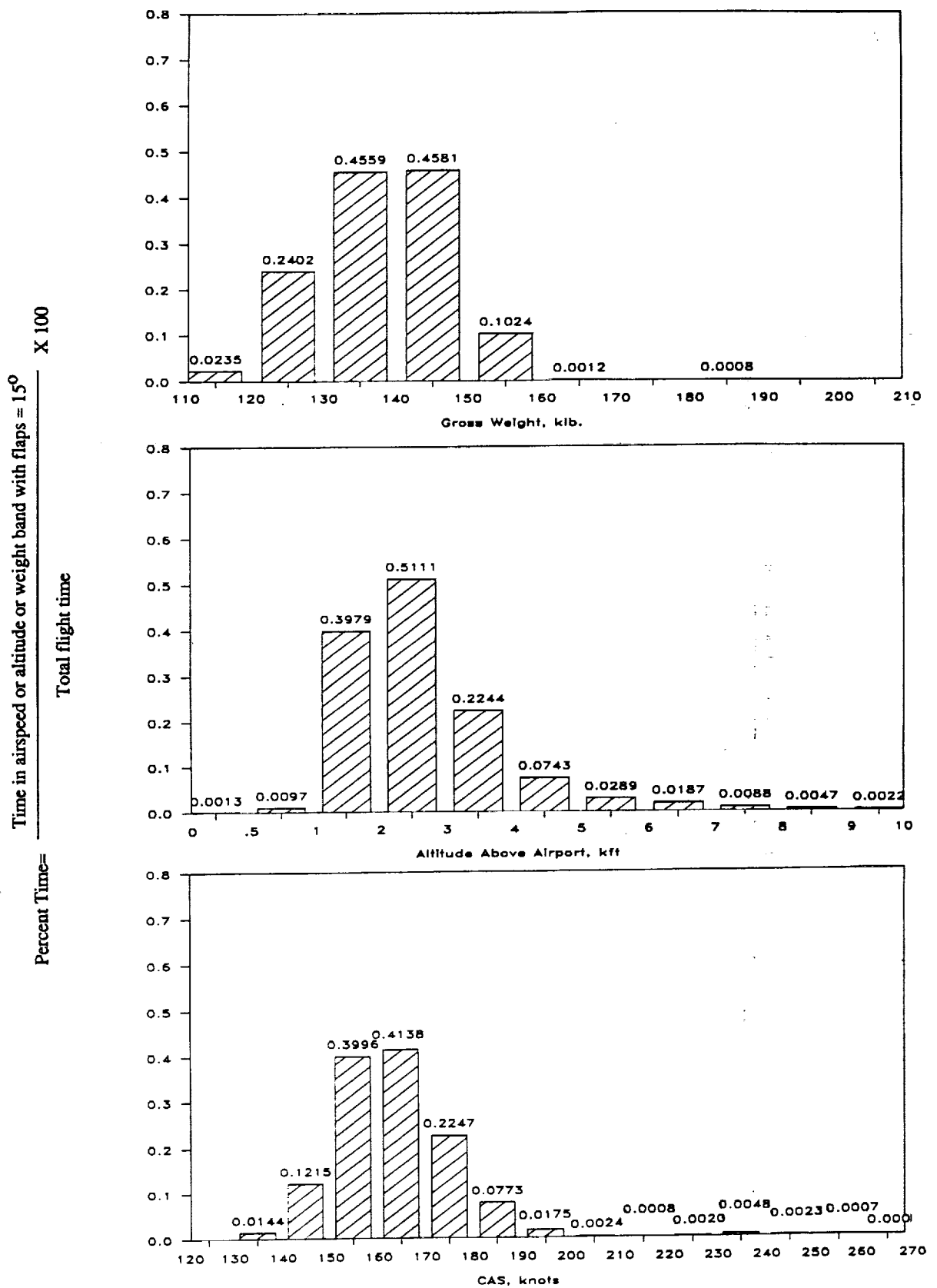


(d) Takeoff, flaps=25°; .0108 hours

Figure 9.- Continued.

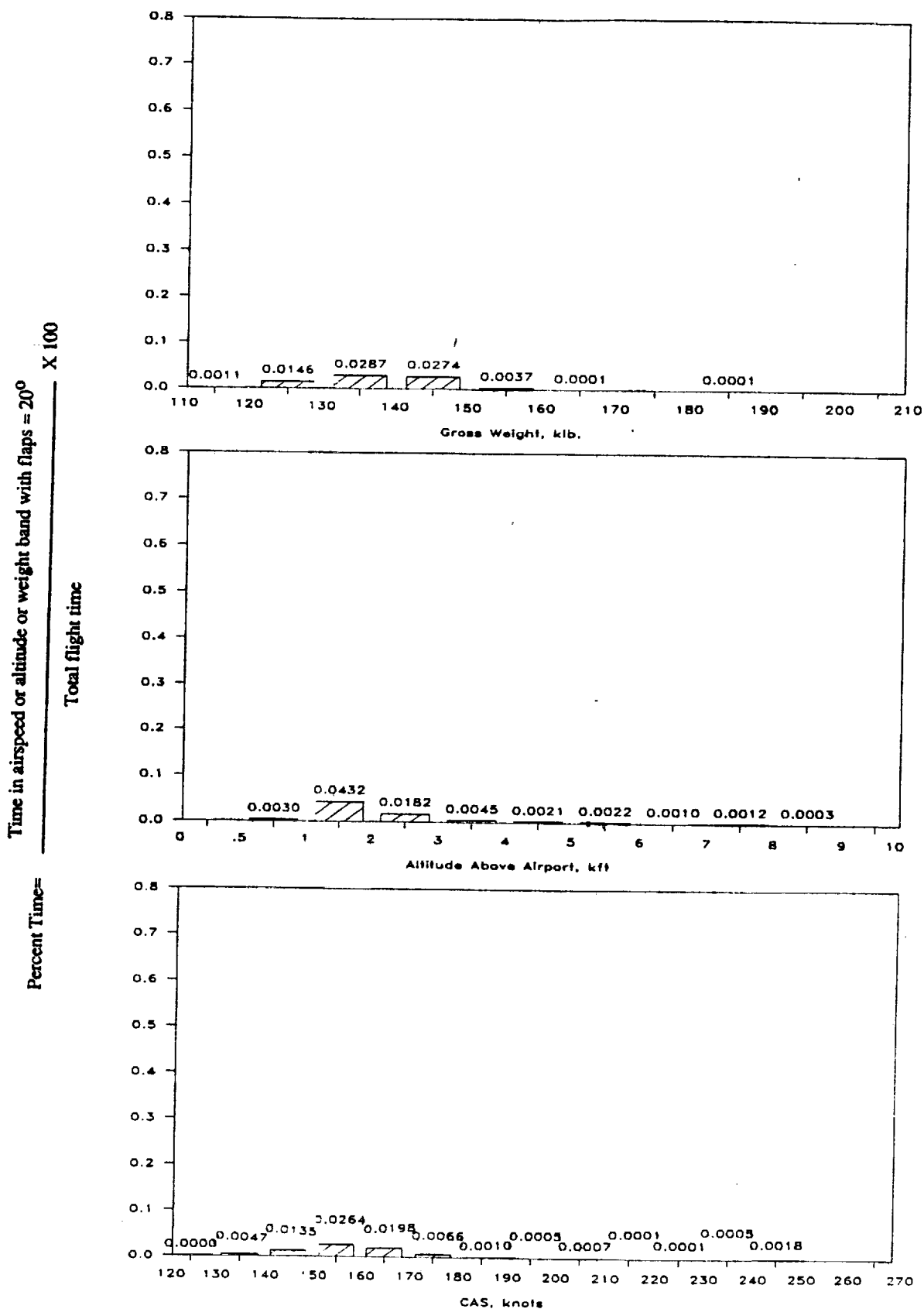


(e) Landing, flaps=5°; 15.2862 hours



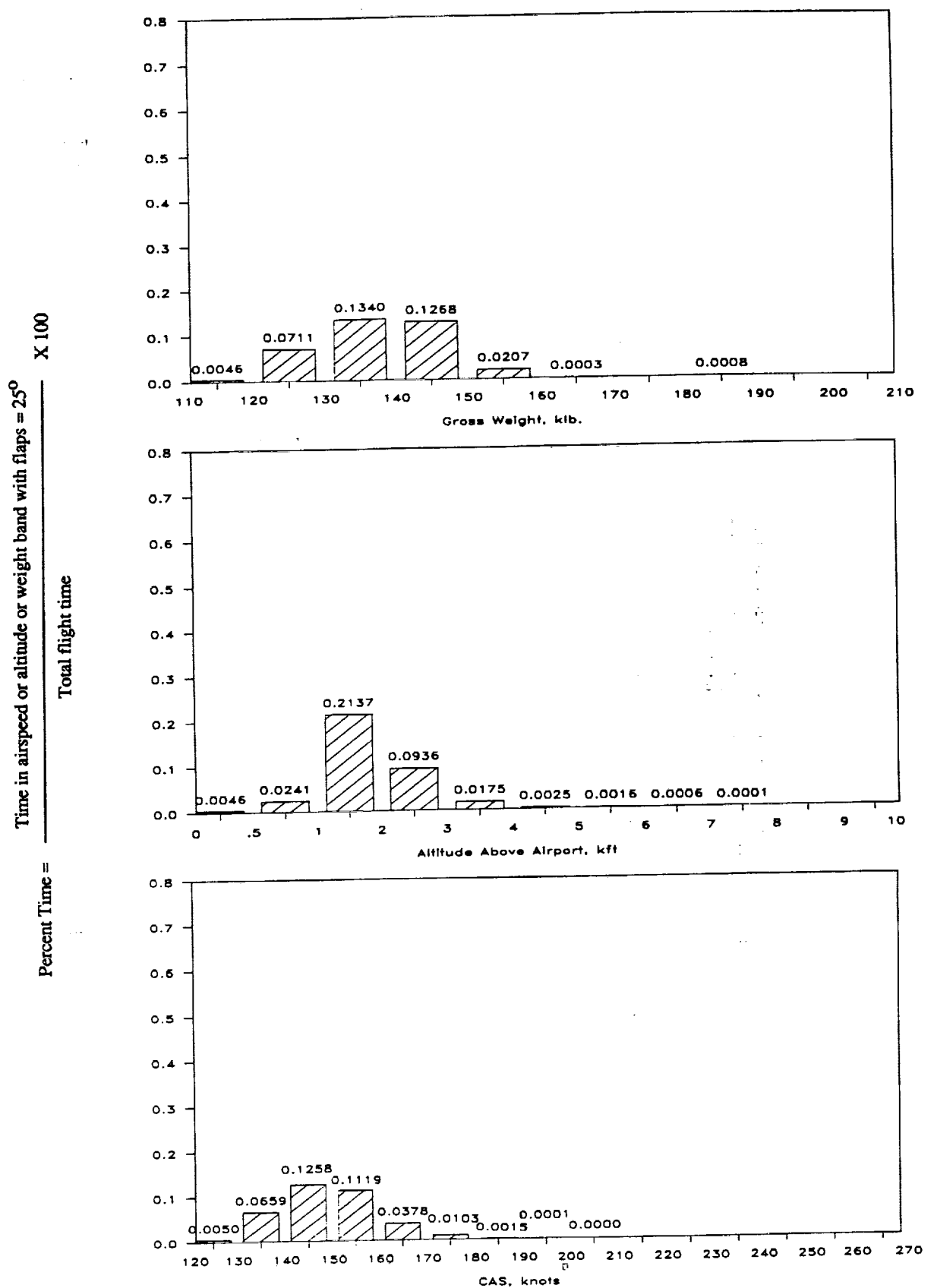
(f) Landing, flaps=15°; 22.635 hours

Figure 9.- Continued.



(g) Landing, flaps=20°; 1.3367 hours

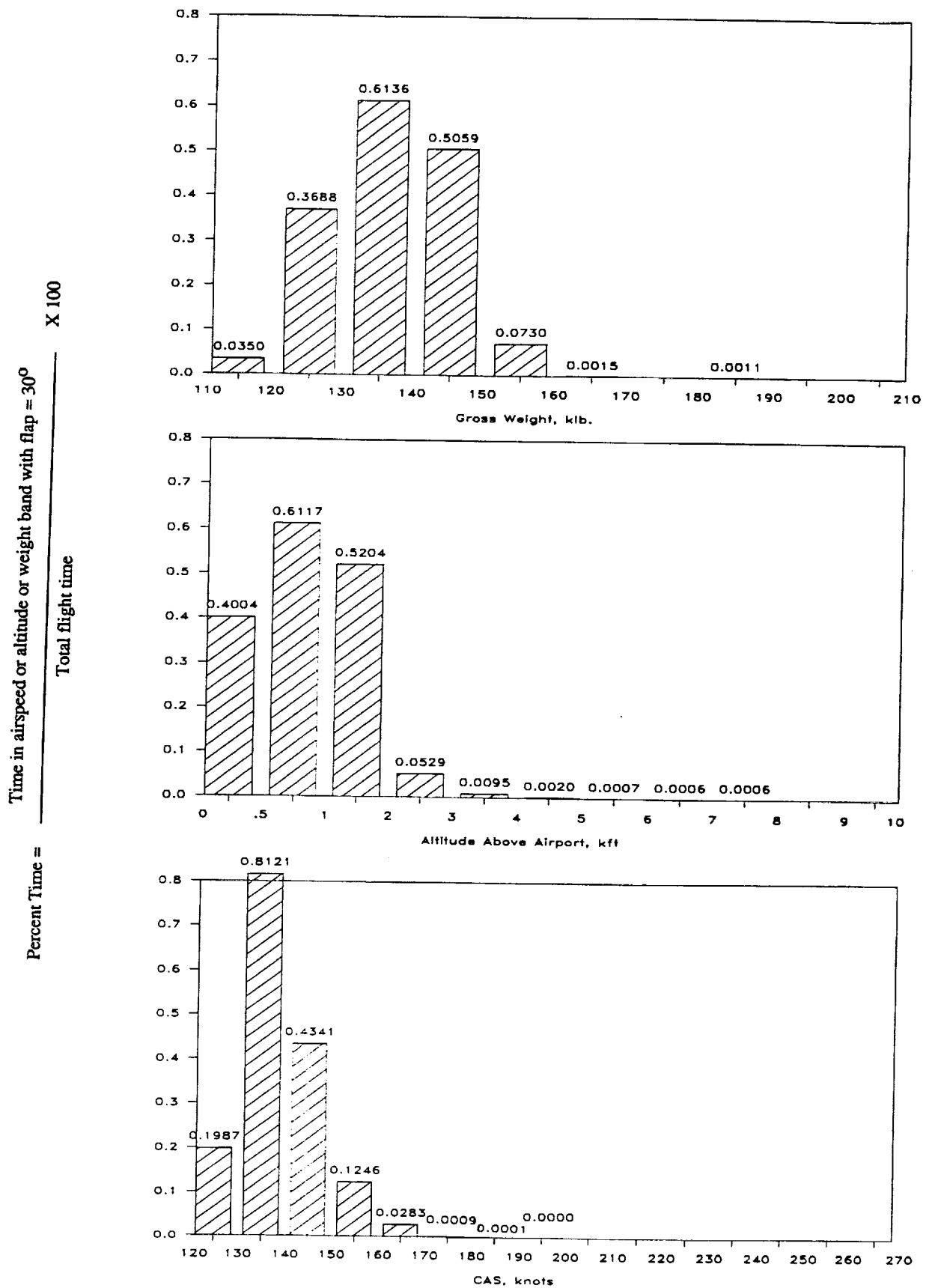
Figure 9.- Continued.



(h) Landing, flaps=25°; 6.3246 hours

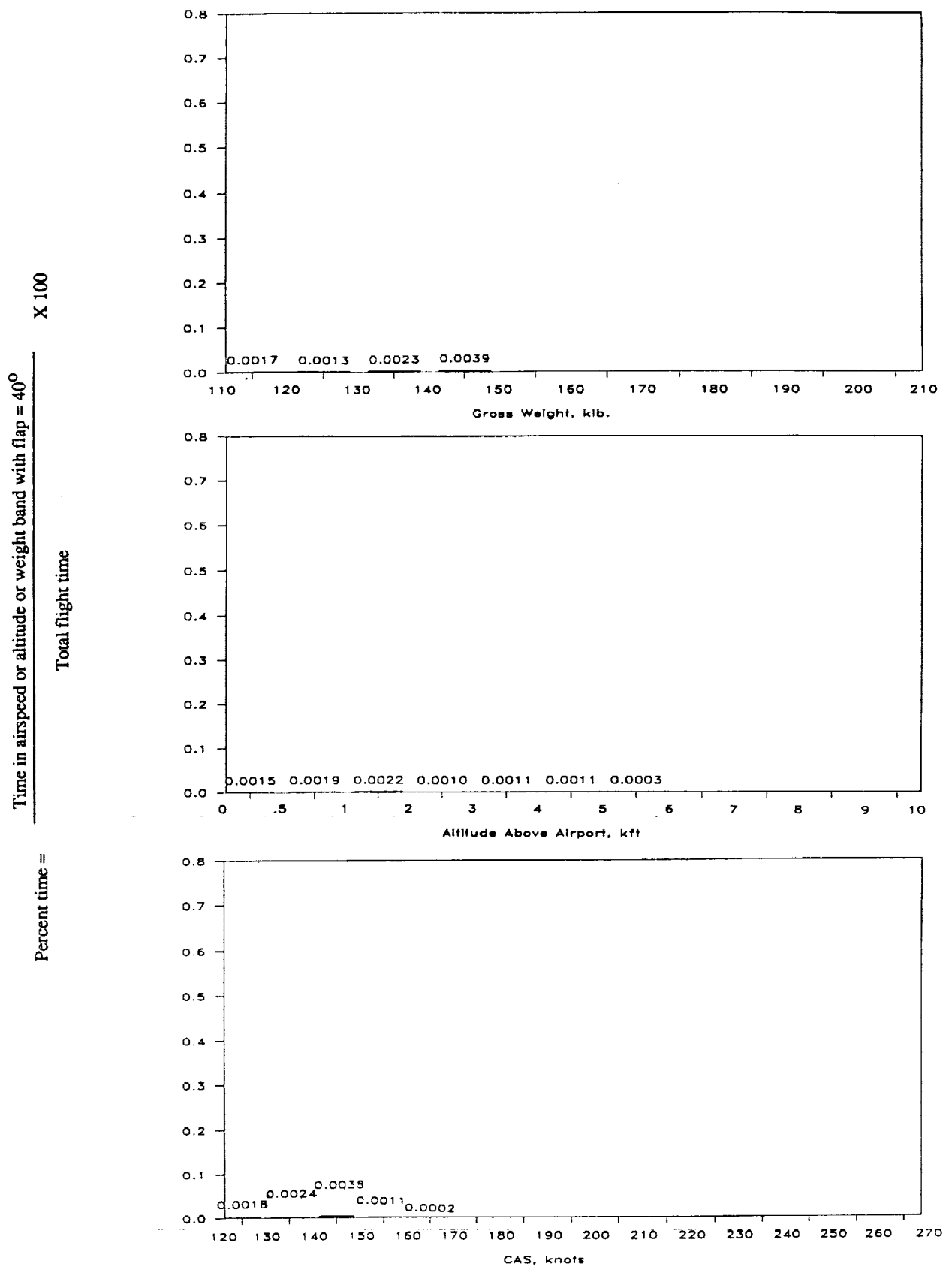
Figure 9.- Continued.





(i) Landing, flaps=30°; 28.2303 hours

Figure 9.- Continued.



(j) Landing, flaps=40°; 0.1619 hours

Figure 9.- Concluded.

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TIME AFTER LIFTOFF, MINUTES	FLAP DEFLECTION, DEGREES				
	35.0	28.0	23.0	18.0	10.0
0.0 - 0.1	0	0	0.1	0.2	44.0
0.1 - 0.2	0	0	0.1	0	22.2
0.2 - 0.3	0	0	0	0.1	5.8
0.3 - 0.4	0	0	0	0	3.9
0.4 - 0.5	0	0	0.1	0	1.8
0.5 - 0.6	0	0	0	0	1.2
0.6 - 0.8	0	0	0	0	1.8
0.8 - 1.0	0	0	0	0	0.2
1.0 - 1.2	0	0	0	0	0
1.2 - 1.4	0	0	0	0	0
1.4 - 1.6	0	0	0	0	0.1
1.6 - 1.8	0	0	0	0	0.1
1.8 - 2.0	0	0	0	0	0
2.0 - 2.2	0	0	0	0	0
2.2 - 2.4	0	0	0	0	0.2
2.4 - 2.6	0	0	0	0	0.1
2.6 - 2.8	0	0	0	0	0
2.8 - 3.0	0	0	0	0	0
3.0 - 3.5	0	0	0	0	0
3.5 - 4.0	0	0	0	0	0
4.0 - 4.5	0	0	0	0	0.1
4.5 - 5.0	0	0	0	0	0
5.0 - 6.0	0	0	0	0	0
6.0 - 7.0	0	0	0	0	0
7.0 - 8.0	0	0	0	0	0
8.0 - 9.0	0	0	0	0	0
9.0 - 10.0	0	0	0	0	0
10.0 - 15.0	0	0	0	0	0
15.0 - 20.0	0	0	0	0	0
20.0 - 25.0	0	0	0	0	0
0.0 - 25.0	0	0	0.3	0.3	79.1
					98.9

Notes:

- 1) 985 Flights
- 2) The first 15 seconds after lift off for each flight are not included.
- 3) Flap deflections less than 4 degrees were considered to be zero.

(a) Take off: Percent of flights vs times when take off flap deflection is reduced to less than indicated values

Figure 10.- Flap deflection times.

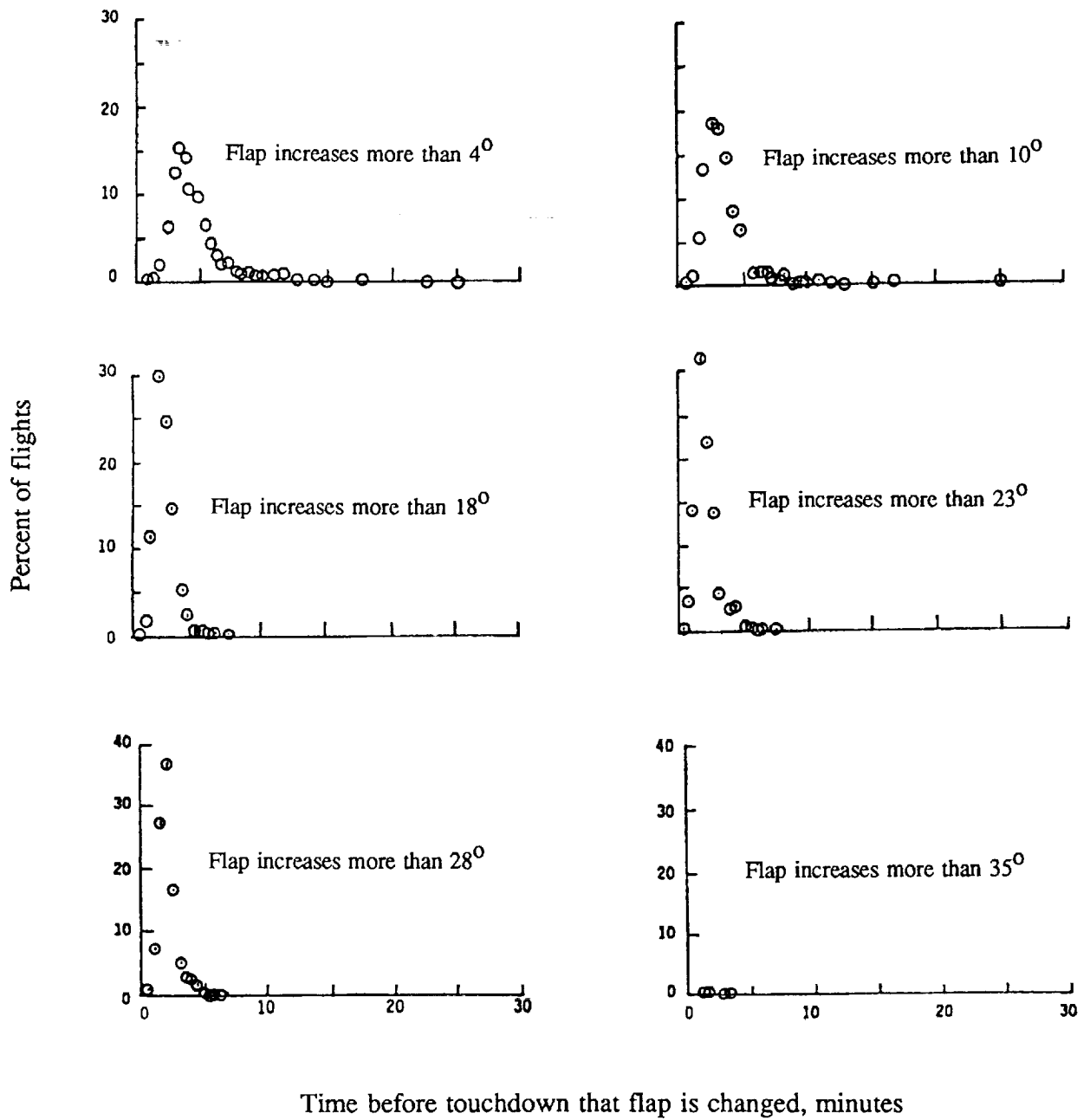
TIME BEFORE TOUCHDOWN, MINUTES	FLAP DEFLECTION, DEGREES					
	4.0	10.0	18.0	23.0	28.0	35.0
0.0 - 0.5	0	0	0.1	0.3	0.6	0
0.5 - 1.0	0.2	0.4	2.2	3.4	7.8	0
1.0 - 1.5	0.8	1.7	11.6	14.2	27.3	0.1
1.5 - 2.0	2.5	5.8	29.9	32.9	36.6	0.2
2.0 - 2.5	6.5	13.2	24.4	22.8	16.9	0
2.5 - 3.0	12.4	18.9	14.8	14.2	5.6	0.2
3.0 - 3.5	15.3	18.2	5.4	4.8	1.4	0.2
3.5 - 4.0	13.6	14.9	2.8	2.2	1.2	0
4.0 - 4.5	10.4	8.3	2.4	2.4	0.9	0
4.5 - 5.0	9.8	6.6	0.7	0.6	0.1	0
5.0 - 5.5	6.8	3.2	0.4	0.3	0.2	0
5.5 - 6.0	4.7	1.9	0.2	0.3	0.1	0
6.0 - 6.5	3.2	1.7	0.3	0.2	0.1	0
6.5 - 7.0	2.2	1.1	0	0	0.1	0
7.0 - 7.5	2.4	0.7	0.2	0.2	0	0
7.5 - 8.0	1.3	0.4	0	0	0	0
8.0 - 8.5	1.0	0.8	0	0	0	0
8.5 - 9.0	1.5	0.2	0	0	0	0
9.0 - 9.5	0.8	0.3	0	0	0	0
9.5 - 10.0	0.6	0.4	0	0	0	0
10.0 - 11.0	0.8	0.3	0	0	0	0
11.0 - 12.0	0.9	0.2	0	0	0	0
12.0 - 13.0	0.3	0.1	0	0	0	0
13.0 - 14.0	0.3	0	0.1	0	0	0
14.0 - 15.0	0.1	0.1	0	0	0	0
15.0 - 17.0	0.3	0.2	0	0	0	0
17.0 - 19.0	0	0	0	0	0	0
19.0 - 21.0	0	0	0	0	0	0
21.0 - 23.0	0.1	0	0	0	0	0
23.0 - 25.0	0.1	0.1	0	0	0	0
25.0 - 30.0	0	0	0	0	0	0
30.0 - 35.0	0	0	0	0	0	0
35.0 - 40.0	0	0	0	0	0	0
40.0 - 60.0	0.1	0	0	0	0	0
0.0 - 60.0	99.3	99.9	95.6	98.9	99.0	0.7

Notes:

- 1) 985 flights
- 2) The last 15 seconds before touchdown on each flight are not included.
- 3) Flap deflections less than 4 degrees were considered to be zero.

(b) Landing: Percent of flights vs times when take off flap deflection is reduced to greater than indicated values

Figure 10.- Continued.



(c) Landing : Plots of data from Figure 10(b)

Figure 10.- Concluded.

EAS	FLAP RANGE																						FLAP DETENT	
	120 KTS	130 KTS	140 KTS	150 KTS	160 KTS	170 KTS	180 KTS	190 KTS	200 KTS	210 KTS	220 KTS	230 KTS	240 KTS	250 KTS	260 KTS	270 KTS	280 KTS	290 KTS	300 KTS	310 KTS	320 KTS			
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
15	0	0	0	2	22	36	16	3	0	0	0	0	0	0	0	0	0	0	0	0	0			
5	0	0	0	0	1	16	35	31	13	2	0	0	0	0	0	0	0	0	0	0	0			

(a) Take off

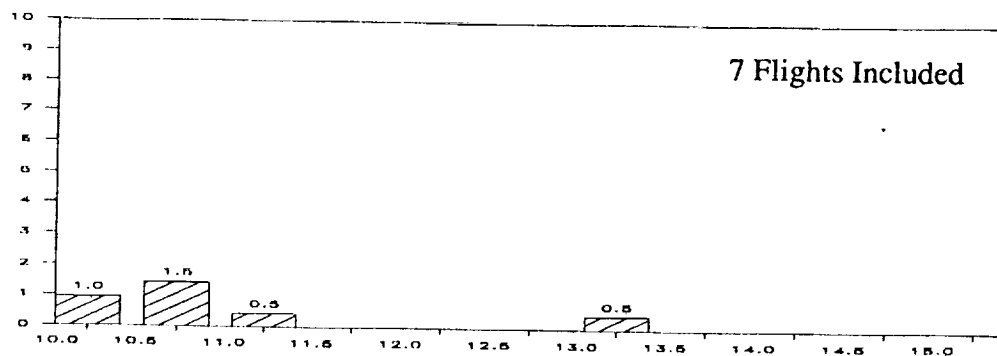
EAS	FLAP																									
	RANGE	DETENT	120 KTS	130 KTS	140 KTS	150 KTS	160 KTS	170 KTS	180 KTS	190 KTS	200 KTS	210 KTS	220 KTS	230 KTS	240 KTS	250 KTS	260 KTS	270 KTS	280 KTS	290 KTS	300 KTS	310 KTS	320 KTS			
4-10	5		0	0	0	1	4	16	27	30	17	4	0	0	0	0	0	0	0	0	0	0	0	0		
10-18	15		0	0	1	7	18	27	28	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0		
18-23	20		0	3	17	32	31	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
23-28	25		0	3	19	36	29	9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
28-35	30		1	16	34	32	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
35-45	40		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

(b) Landing

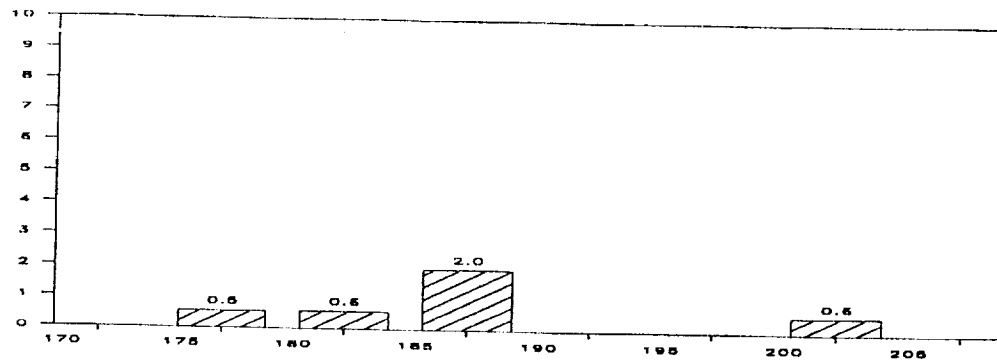
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Figure 11.- Percent of lights vs equivalent airspeed at flap detent change.

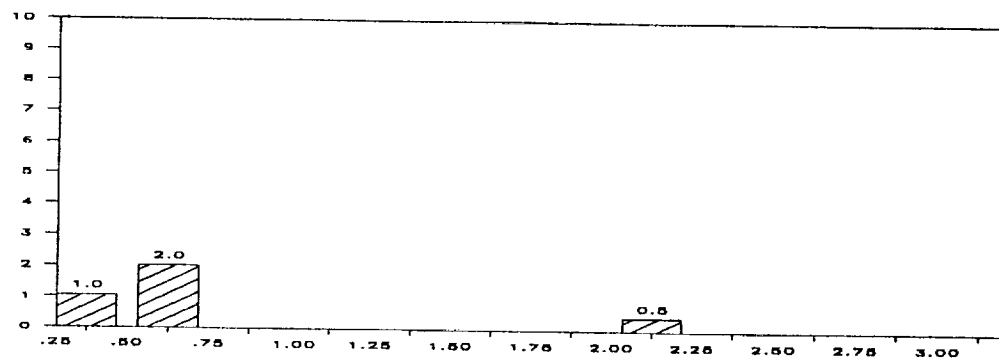
Number of Flights



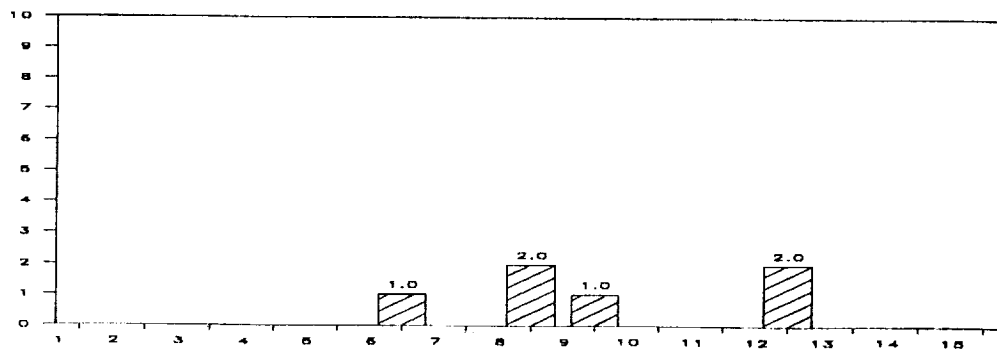
(a) Pressure altitude at initial flap deflection, kft.



(b) Calibrated airspeed at initial flap deflection, kft.



(c) Minutes above 10,000 ft. that flaps deflected > .5 degrees



(d) Minutes before touchdown of initial flap detection

Figure 12.- Flap use above 10,000 feet altitude.

		PRESSURE ALTITUDE BANDS																			
a <sub>n</sub>	LEVEL g's	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
.80	0	0	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	
.70	0	0	0	0	0	0	0	0	0	0.03	0	0.02	0	0	0	0	0	0	0	0	
.60	0.01	0	0	0.01	0	0.01	0	0.03	0.05	0.07	0	0.04	0	0	0	0	0	0	0.01	0.03	
.50	0.03	0.01	0.09	0.02	0.09	0.03	0.05	0.13	0.07	0.03	0	0.02	0	0	0	0	0	0	0.19	0.03	
.40	0.11	0.09	0.09	0.09	0.09	0.09	0.05	0.13	0.07	0.03	0	0.02	0	0	0	0	0	0	0.19	0.03	
.30	0.91	0.69	0.69	0.69	0.52	0.52	0.33	0.39	0.28	1.47	0.34	0.34	0	0.12	0	0	0	0	1.70	0.03	
.20	10.19	7.04	7.04	4.05	4.05	4.05	2.10	2.18	2.18	1.47	0.34	0.34	0	0.12	0	0	0	0	1.70	0.03	
.15	34.50	23.60	23.60	15.84	15.84	15.84	7.05	6.33	6.33	4.82	1.25	1.25	0	0.46	0	0	0	0	5.85	0.03	
.10	108.23	79.62	79.62	51.88	51.88	51.88	28.87	23.72	23.72	17.32	5.83	5.83	0	2.72	3.02	0	0	0	20.46	0.03	
.05	322.04	245.26	245.26	195.96	195.96	195.96	142.55	112.53	112.53	93.77	41.56	41.56	0	27.70	24.16	0	0	0	85.63	0.03	
0	684.93	564.41	564.41	585.57	585.57	585.57	671.23	744.40	744.40	980.28	1102.65	1102.65	0	983.25	800.34	0	0	0	925.62	0.03	
-.05	285.33	191.96	191.96	170.66	170.66	170.66	149.69	141.17	141.17	103.38	46.40	46.40	0	27.25	48.32	0	0	0	82.46	0.03	
-.10	69.54	41.84	41.84	36.12	36.12	36.12	22.58	21.54	21.54	15.61	6.22	6.22	0	3.70	0	0	0	0	15.00	0.03	
-.15	14.22	9.59	9.59	7.17	7.17	7.17	4.39	4.94	4.94	3.64	1.09	1.09	0	0.66	0	0	0	0	3.08	0.03	
-.20	2.88	2.23	2.23	1.89	1.89	1.89	1.18	1.50	1.50	1.13	0.26	0.26	0	0.13	0	0	0	0	0.74	0.03	
-.30	0.17	0.12	0.12	0.34	0.34	0.34	0.24	0.38	0.38	0.33	0.03	0.03	0	0.01	0	0	0	0	0.10	0.03	
-.40	0	0.01	0.01	0.07	0.07	0.07	0.09	0.19	0.19	0.10	0.01	0.01	0	0	0	0	0	0	0.03	0.03	
-.50	0	0	0	0.01	0.01	0.01	0.03	0.03	0.03	0.06	0	0	0	0	0	0	0	0	0.01	0.03	
-.60	0	0	0	0	0	0	0	0	0.03	0.04	0	0	0	0	0	0	0	0	0	0	
-.70	0	0	0	0	0	0	0	0	0.02	0.02	0	0	0	0	0	0	0	0	0	0	
-.80	0	0	0	0	0	0	0	0	0.02	0.02	0	0	0	0	0	0	0	0	0	0	
-1.00	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	
-1.20	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
FLIGHT HOURS @ ALT		102.71	105.51	104.07	104.07	104.07	74.64	87.46	132.30	132.30	495.03	663.54	0.33	1765.59	1765.59	0.33	1765.59	1765.59	1765.59	1765.59	
FLIGHT MILES @ ALT		18522.12	26173.93	33995.36	33995.36	33995.36	28461.45	36365.13	58863.40	58863.40	223579.81	296925.11	146.91	723033.21	723033.21	146.91	723033.21	723033.21	723033.21	723033.21	
		TOTAL FLIGHTS																		985	985
		TOTAL FLIGHT HOURS FLAPS UP AND DOWN																		1765.59	1765.59
		TOTAL FLIGHT MILES FLAPS UP AND DOWN																		723033.21	723033.21

(a)  $a_n$  Level crossing counts pre hour within pressure altitude bands

Figure 13.- Normal acceleration exceedances.



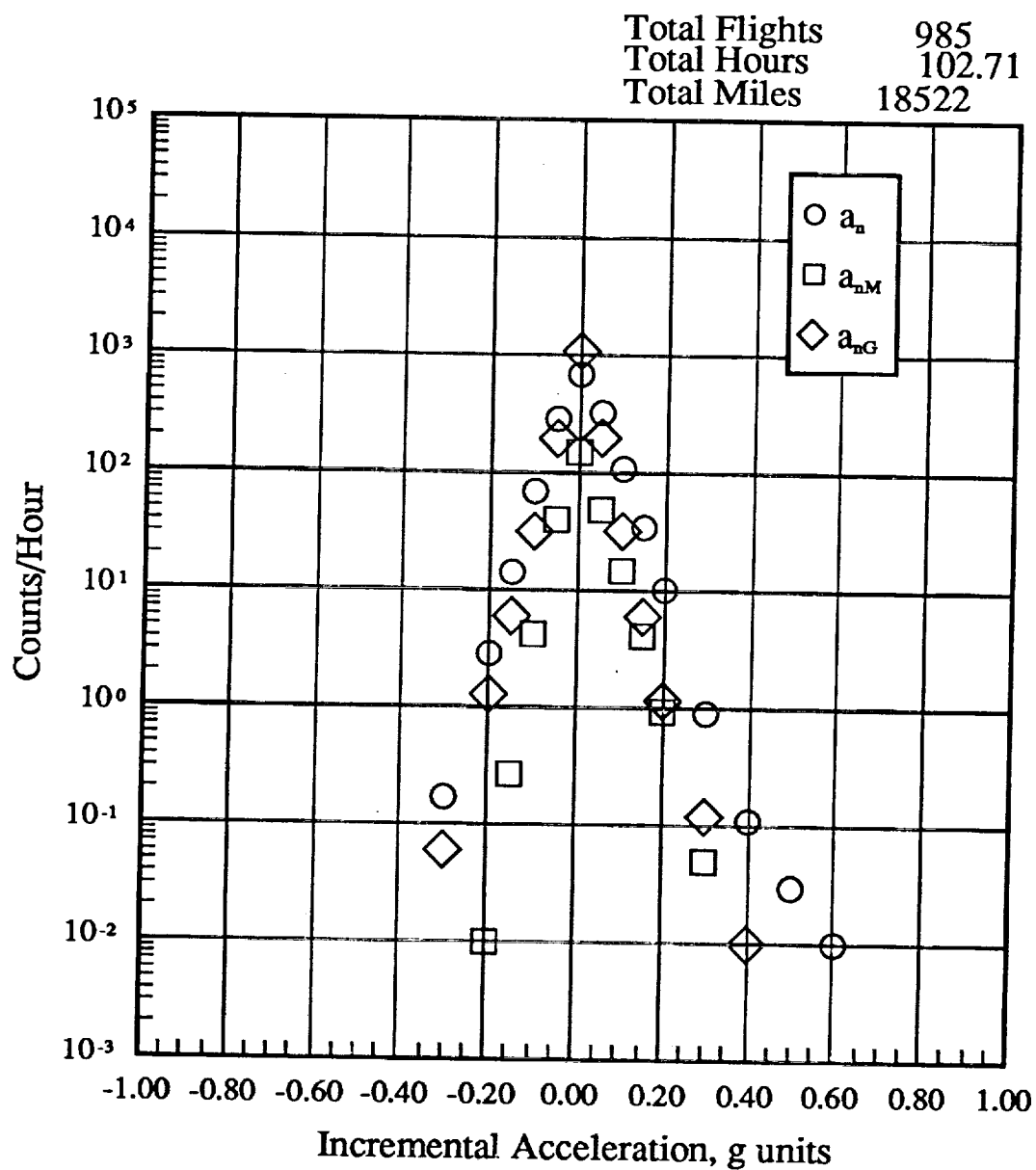


PRESSURE ALTITUDE BANDS

a <sub>nG</sub> LEVEL g's	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0.02	0.02	0	0	0	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0	0	0.02	0.02	0	0	0	0	0	0	0	0	0	0
.50	0	0	0	0	0	0	0	0	0.05	0.05	0	0	0	0	0	0	0	0	0	0
.40	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.03	0.10	0.10	0.06	0	0	0	0	0	0	0.01	0.05	0.05
.30	0.12	0.06	0.12	0.16	0.16	0.16	0.13	0.27	0.27	0.27	0.17	0.01	0	0	0	0	0	0.34	0	0
.20	1.16	1.14	1.14	0.86	0.86	0.86	0.60	0.60	0.90	0.90	0.63	0.09	0.04	0	0	0	0	1.25	0	0
.15	6.05	4.12	4.12	2.90	2.90	2.90	1.93	1.93	2.25	2.25	1.59	0.39	0.16	0	0	0	0	5.64	37.98	1707.62
.10	32.15	17.52	17.52	11.90	11.90	11.90	8.17	8.17	7.99	7.99	5.55	1.89	0.89	0	0	0	0	18.12	2268.12	1707.62
.05	197.19	105.34	105.34	74.31	74.31	74.31	53.48	47.57	47.57	47.57	37.34	17.24	9.52	18.12	2268.12	1707.62	1707.62	37.89	37.89	37.89
0	1083.63	1139.33	1139.33	1258.02	1258.02	1258.02	1521.30	1615.16	1615.16	1615.16	1749.36	1896.69	1848.57	1848.57	1848.57	1848.57	1848.57	1848.57	1848.57	1848.57
-.05	194.46	106.43	106.43	75.56	75.56	75.56	54.19	48.07	48.07	48.07	37.63	16.77	9.49	0	0	0	0	5.52	5.52	5.52
-.10	31.63	16.89	16.89	11.61	11.61	11.61	8.15	7.91	7.91	7.91	5.45	1.86	0.86	0	0	0	0	1.24	1.24	1.24
-.15	6.02	3.93	3.93	2.84	2.84	2.84	1.98	2.23	2.23	2.23	1.51	0.42	0.17	0	0	0	0	0.36	0.36	0.36
-.20	1.29	1.03	1.03	0.95	0.95	0.95	0.75	0.81	0.81	0.81	0.64	0.10	0.05	0	0	0	0	0.06	0.06	0.06
-.30	0.06	0.09	0.09	0.17	0.17	0.17	0.17	0.29	0.29	0.29	0.16	0.01	0	0	0	0	0	0.02	0.02	0.02
-.40	0	0	0	0.01	0.01	0.01	0.04	0.15	0.15	0.15	0.07	0	0	0	0	0	0	0.01	0.01	0.01
-.50	0	0	0	0.01	0.01	0.01	0.01	0.06	0.06	0.06	0.05	0	0	0	0	0	0	0	0	0
-.60	0	0	0	0	0	0	0.01	0.05	0.05	0.05	0.03	0	0	0	0	0	0	0	0	0
-.70	0	0	0	0	0	0	0	0.02	0.02	0.02	0.02	0	0	0	0	0	0	0	0	0
-.80	0	0	0	0	0	0	0	0.02	0.02	0.02	0.01	0	0	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	105.51	104.07	104.07	104.07	74.64	87.46	87.46	87.46	132.30	495.03	663.54	663.54	663.54	663.54	663.54	663.54	663.54	663.54
FLIGHT MILES @ ALT	18522.12	26173.93	26173.93	33995.36	33995.36	33995.36	28461.45	36365.13	36365.13	36365.13	58863.40	223579.81	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11	296925.11
TOTAL FLIGHTS																				
TOTAL FLIGHT HOURS FLAPS UP AND DOWN																				
TOTAL FLIGHT MILES FLAPS UP AND DOWN																				
985																				
1765.59																				
723033.21																				

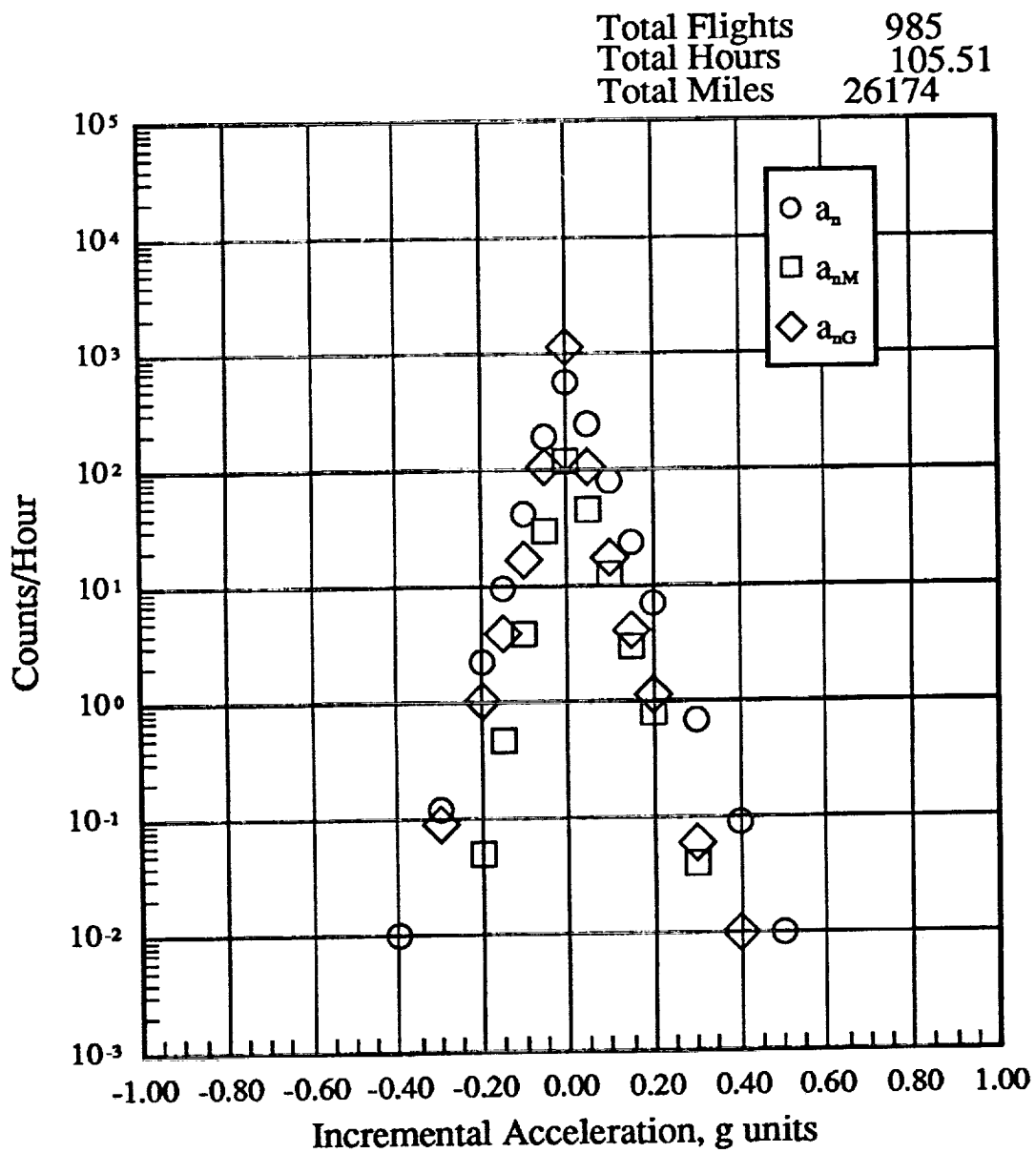
(c) a<sub>nG</sub> Level crossing counts per hour within pressure altitude bands

Figure 13.- Continued.



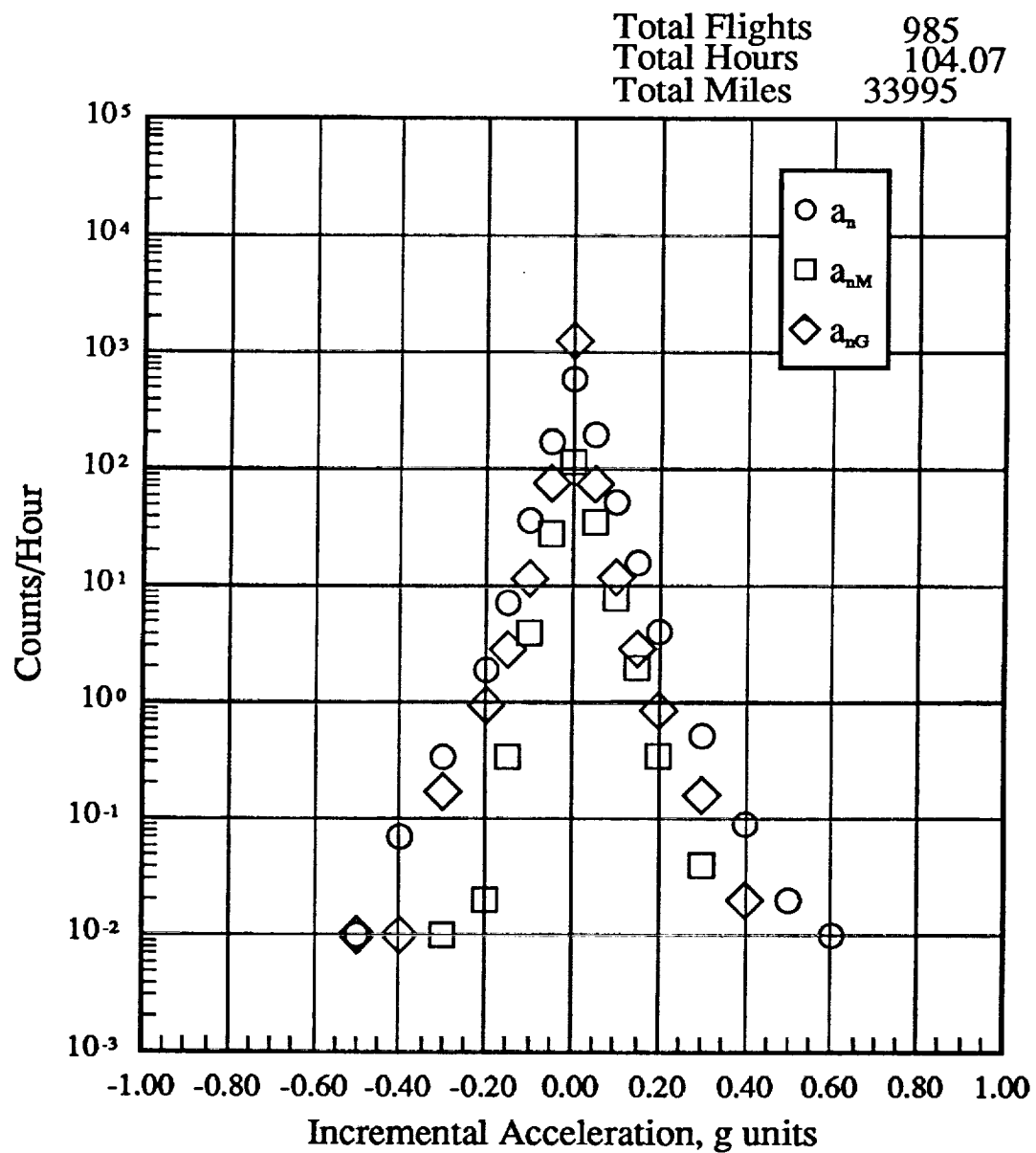
(d)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , -500 to 4500 feet altitude

Figure 13.- Continued.



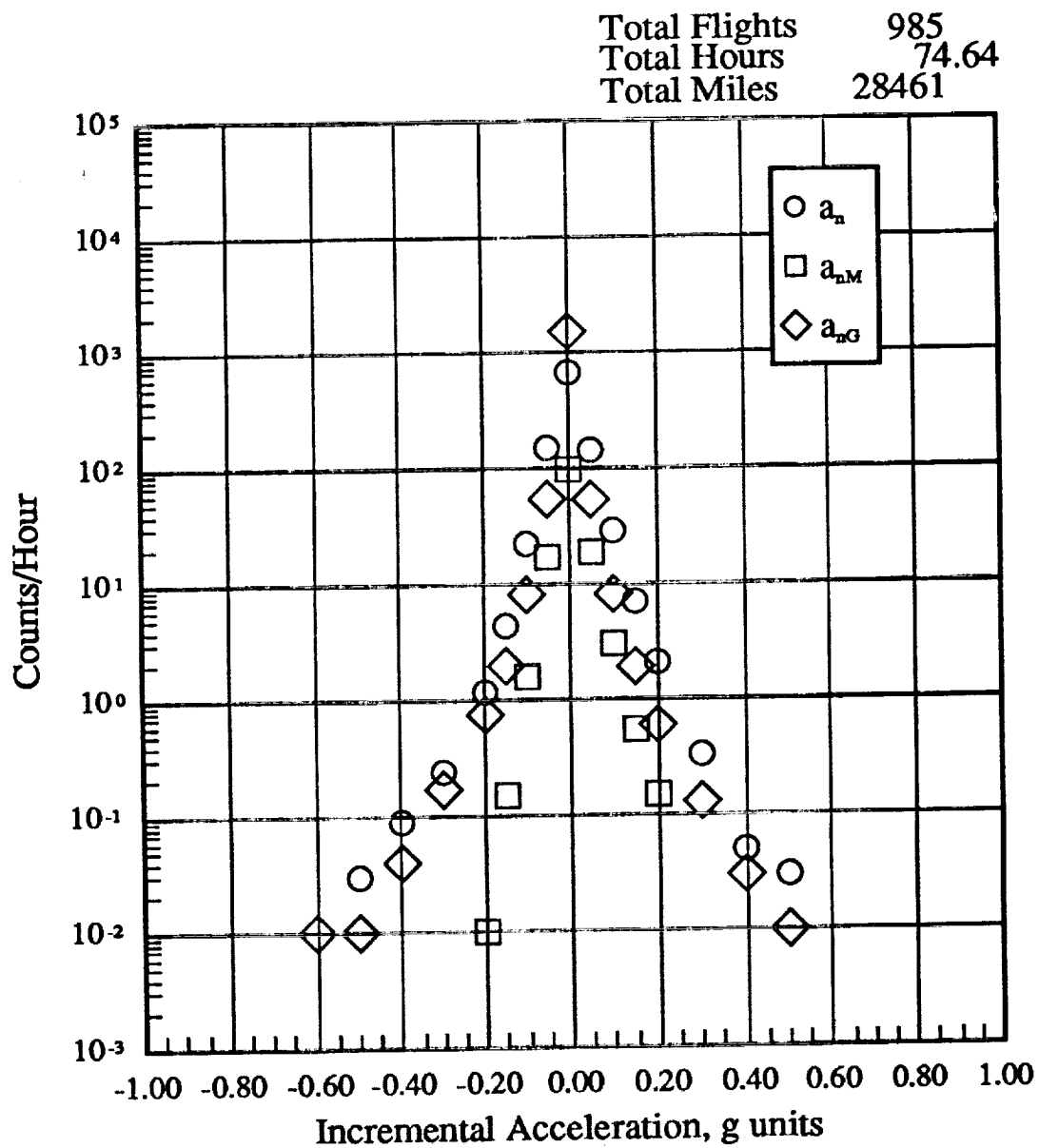
(e)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 9500 to 14500 feet altitude

Figure 13.- Continued.



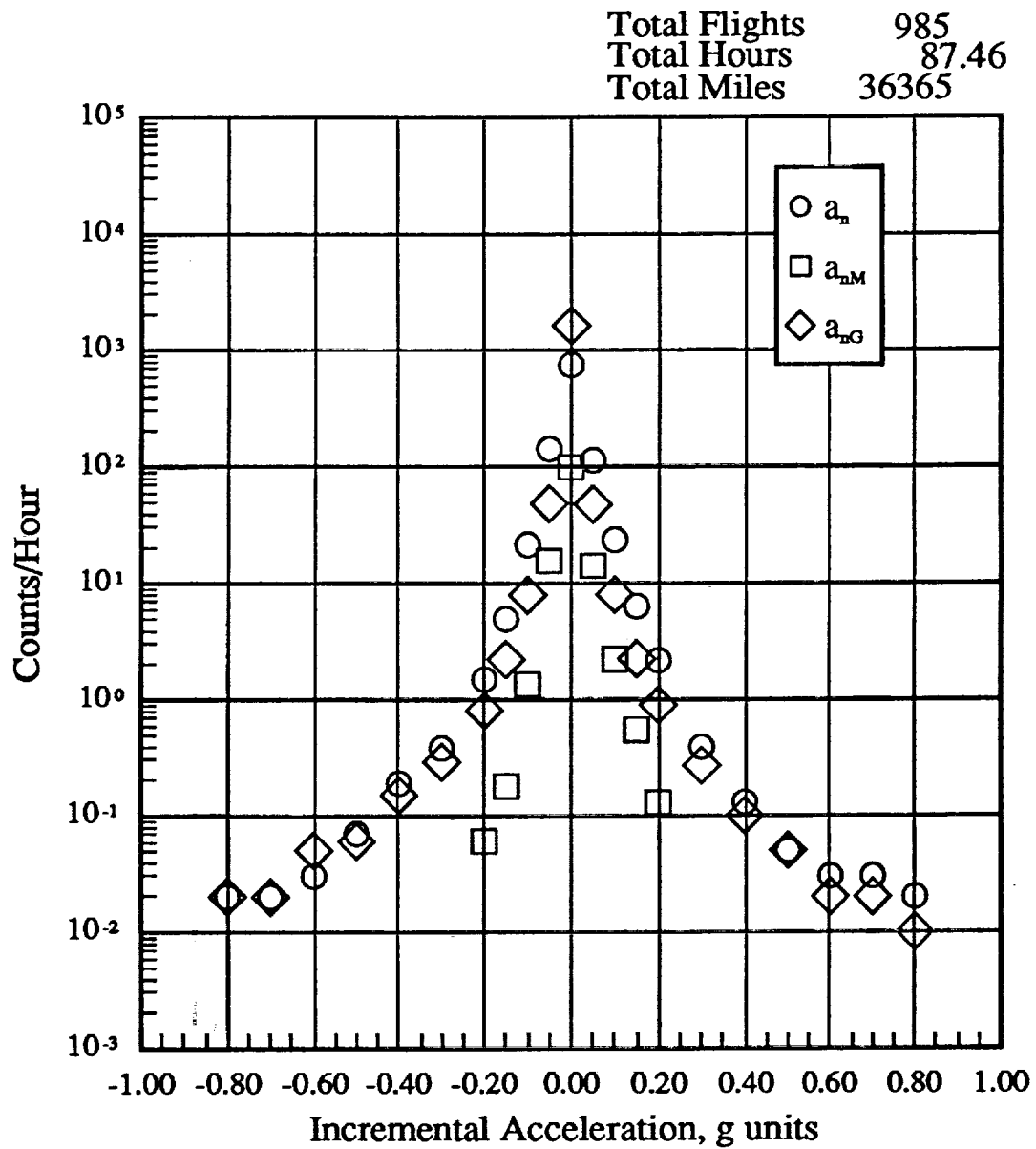
(f)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 9500 to 14500 feet altitude

Figure 13.- Continued.



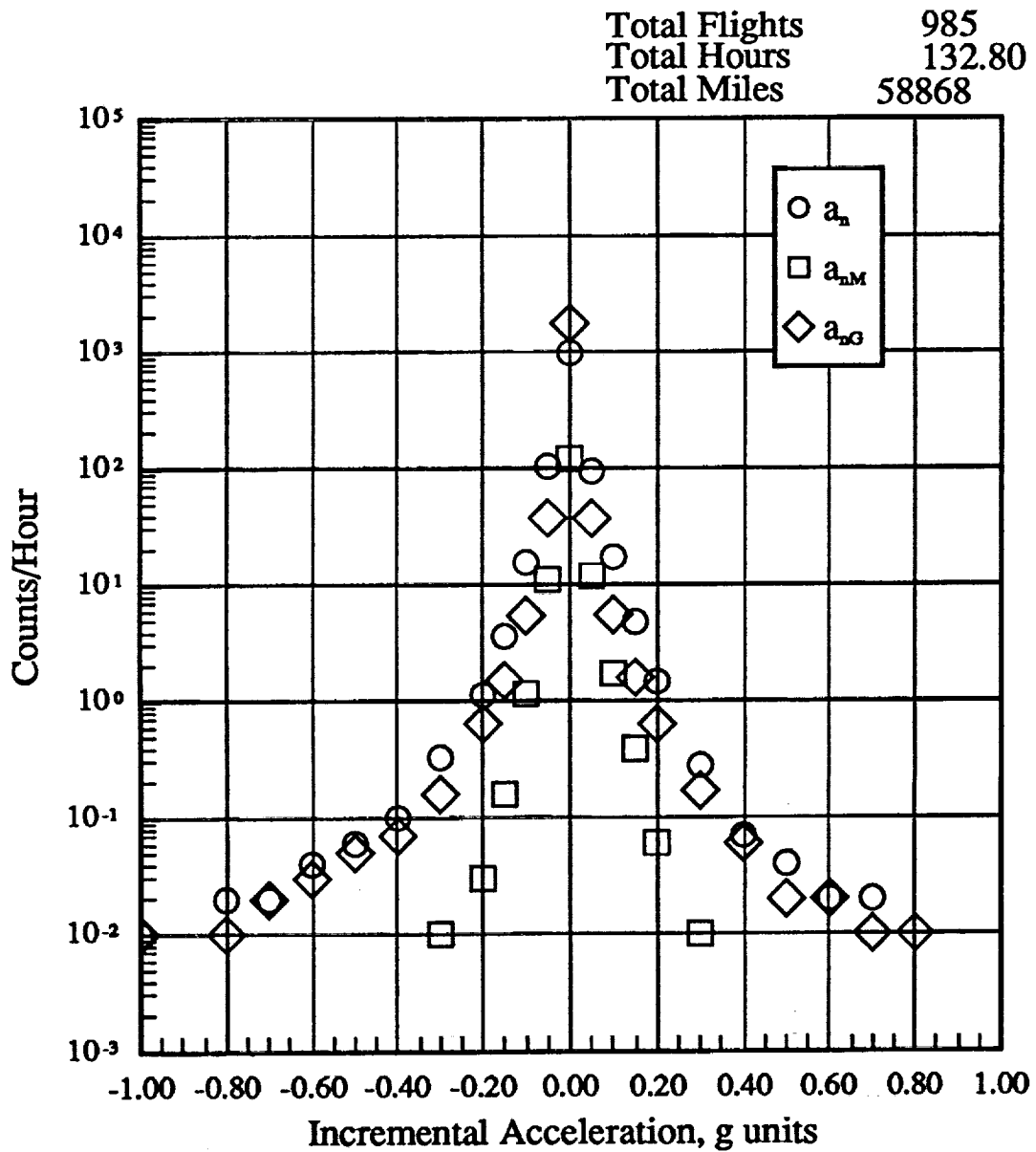
(g)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 14500 to 19500 feet altitude

Figure 13.- Continued.



(h)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 19500 to 24500 feet altitude

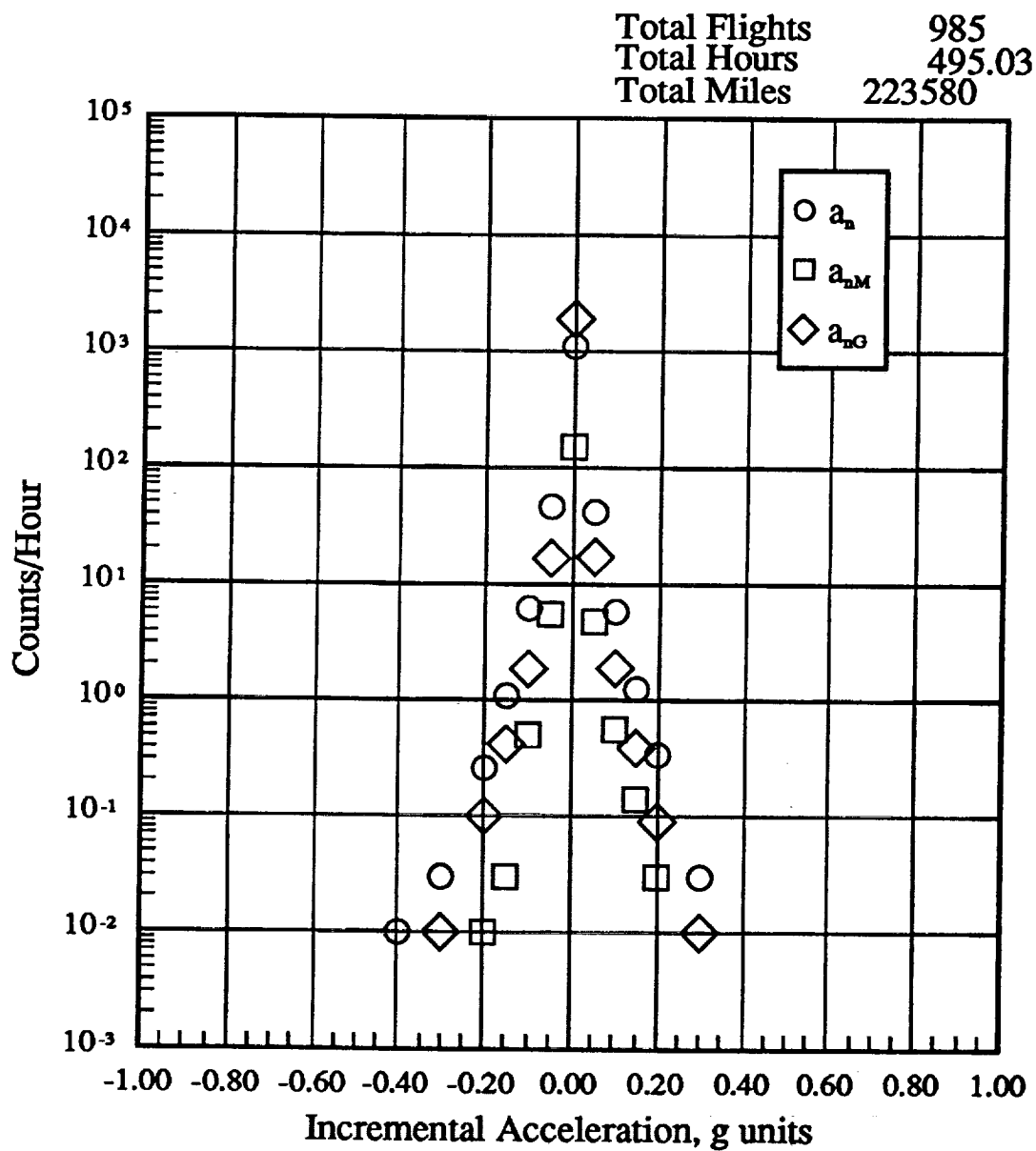
Figure 13.- Continued.



(i)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 24500 to 29500 feet altitude

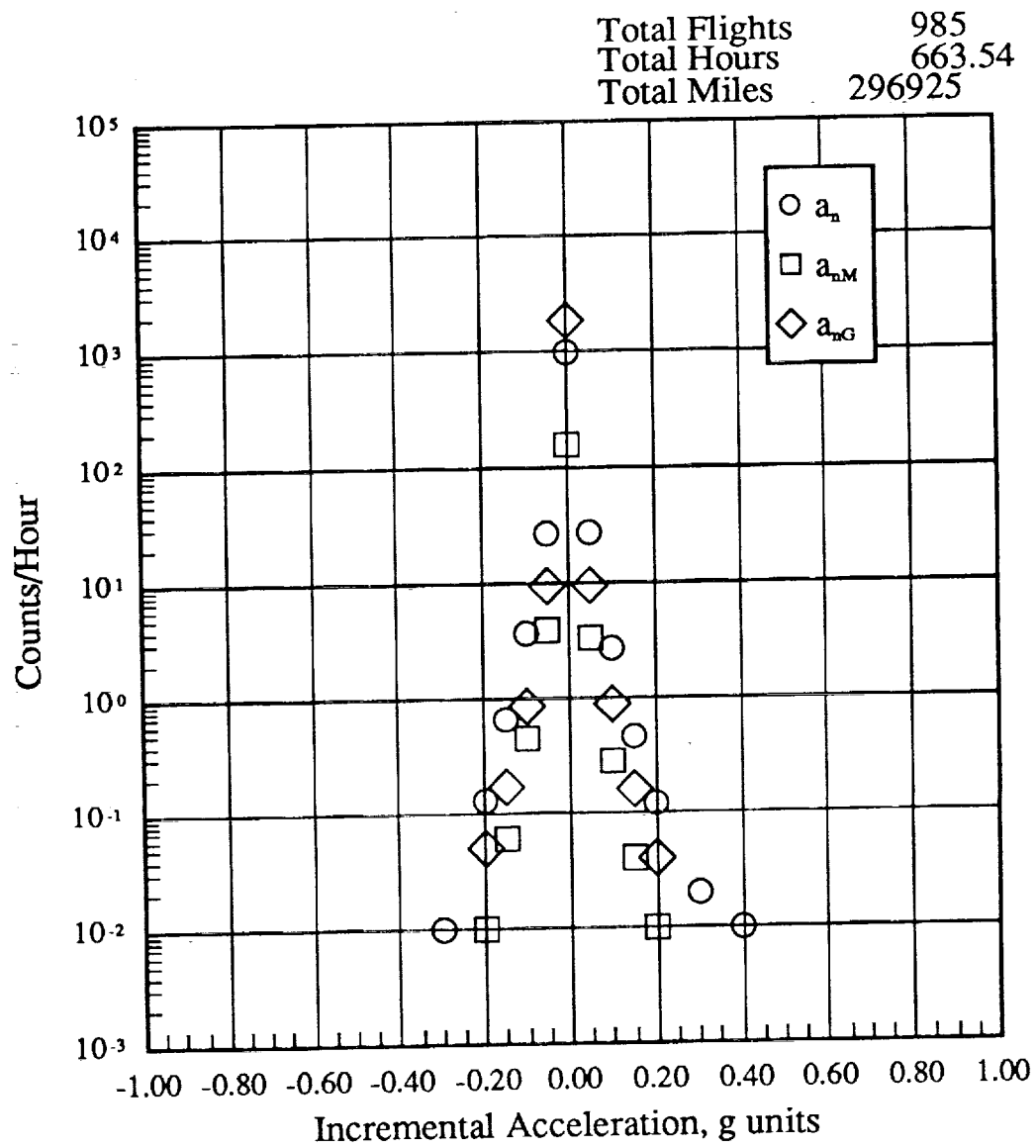
Figure 13.- Continued.





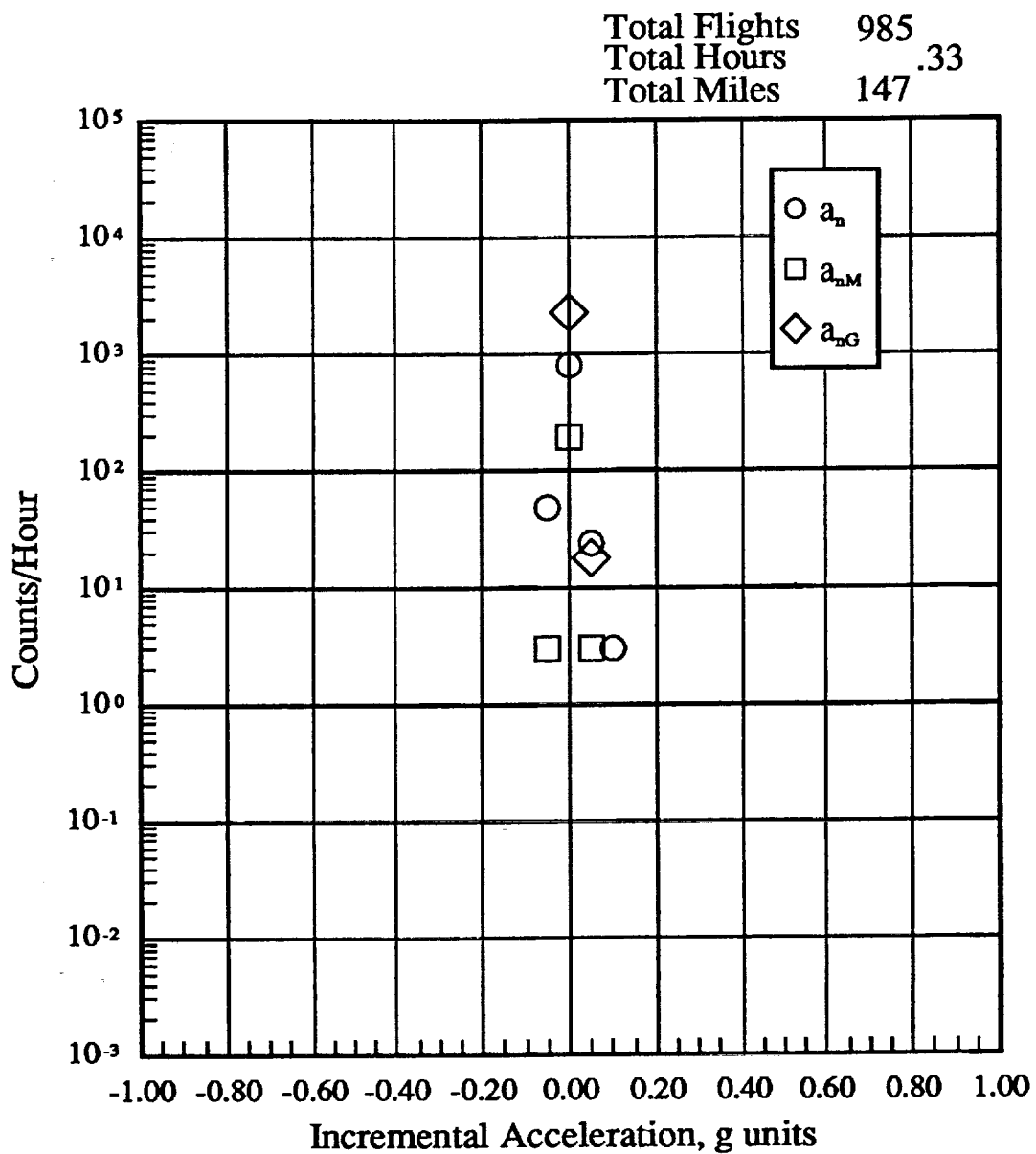
(j)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 29500 to 34500 feet altitude

Figure 13.- Continued.



(k)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 34500 to 39500 feet altitude

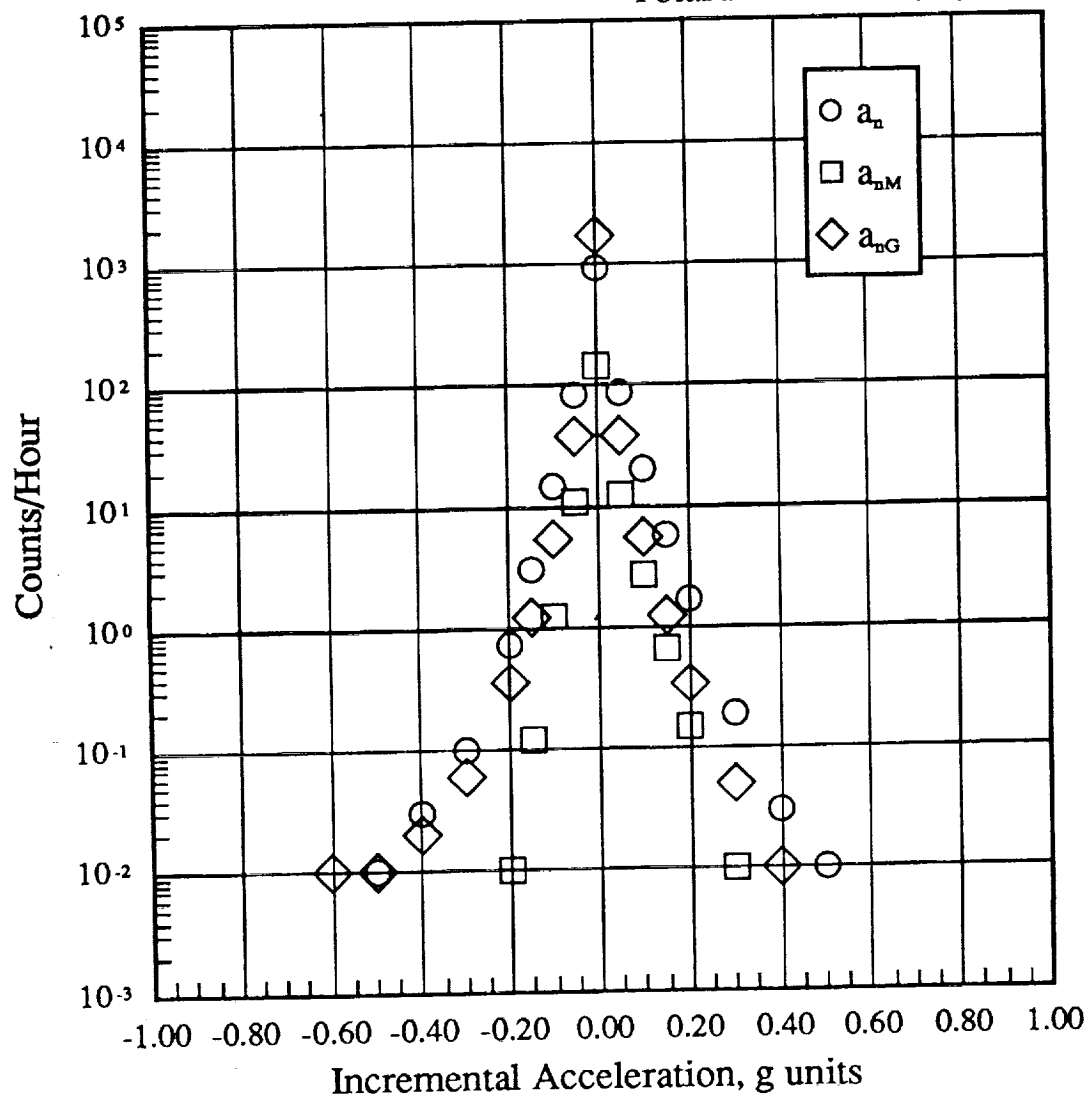
Figure 13.- Continued.



(l)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 39500 to 44500 feet altitude

Figure 13.- Continued.

Total Flights 985  
 Total Hours 1765.59  
 Total Miles 723083



(m)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , -500 to 44500 feet altitude

Figure 13.- Concluded.

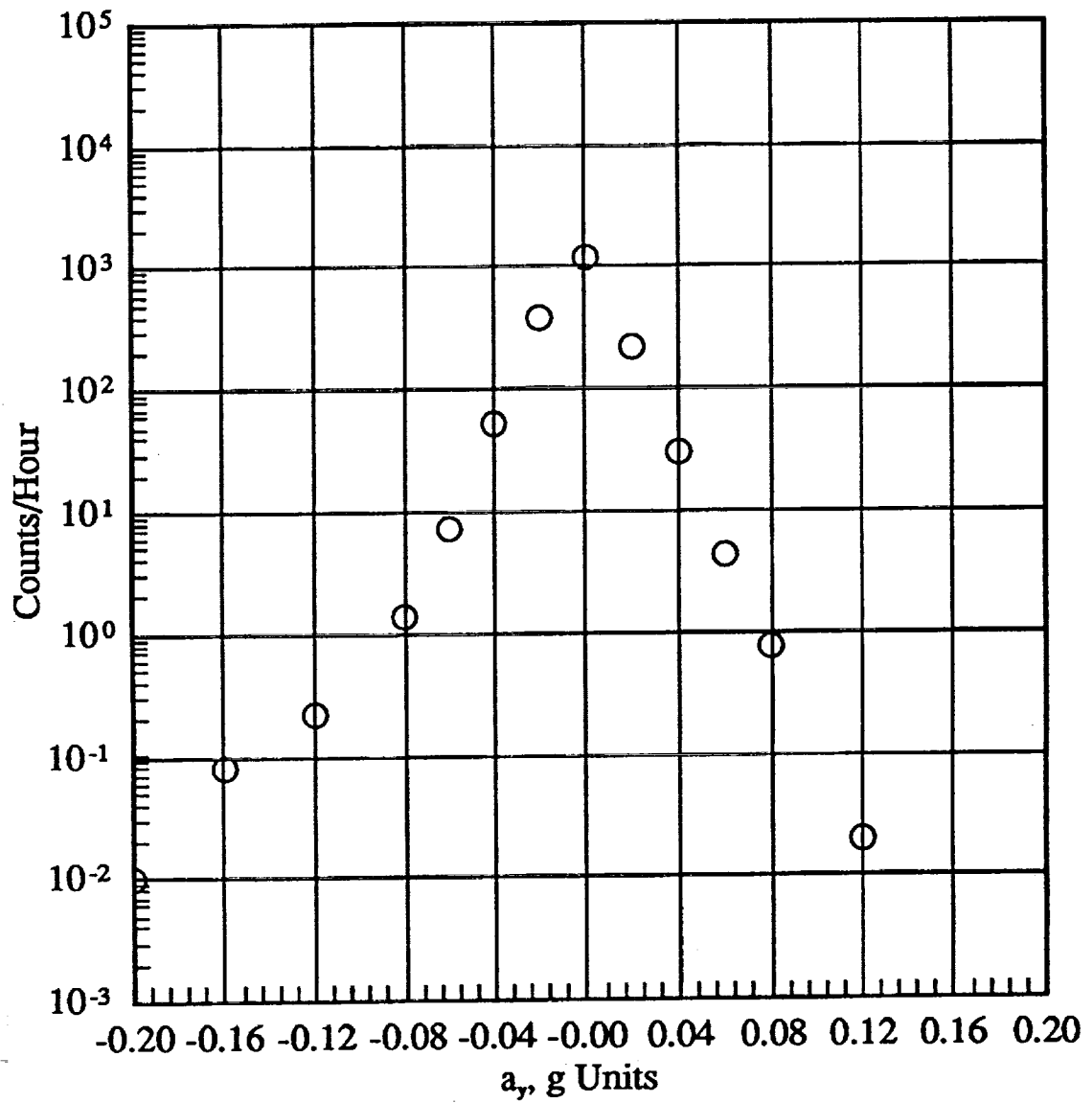
PRESSURE ALTITUDE BANDS

a <sub>y</sub> LEVEL g's	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT
.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.08	0.02	0.76	0.22	1.35	0.20	0.73	0.03	0.21	0.08	0.33	0.27	0.09	0.01	0.05	0.02	0	0	0.01	0.02	0.13
.06	4.35	30.91	9.62	4.26	4.26	3.48	0.74	1.03	1.03	0.74	0.74	0.74	0.28	0.09	0.09	0	0	0.63	0.13	0.63
.04	30.91	222.65	87.94	42.08	42.08	31.31	3.48	4.07	4.07	3.10	3.10	3.10	1.45	0.73	0.73	0	0	3.89	0.63	3.89
.02	222.65	1205.53	900.69	839.85	839.85	900.22	3.48	4.07	4.07	26.18	26.18	26.18	14.49	9.33	9.33	6.04	6.04	33.04	3.89	33.04
0	1205.53	387.15	171.07	88.58	88.58	65.09	3.48	4.07	4.07	1111.53	1111.53	1111.53	1245.60	14.62	14.62	1522.15	1522.15	1113.78	1113.78	1113.78
-.02	53.20	53.20	15.85	7.10	7.10	5.23	0.99	1.28	1.28	32.89	32.89	32.89	14.62	10.20	10.20	0	0	53.46	53.46	53.46
-.04	7.29	7.29	1.78	1.06	1.06	0.99	0.99	1.28	1.28	3.61	3.61	3.61	1.32	0.57	0.57	0	0	5.79	5.79	5.79
-.06	1.38	1.38	0.27	0.19	0.19	0.32	0.32	1.28	1.28	0.87	0.87	0.87	0.23	0.08	0.08	0	0	0.86	0.86	0.86
-.08	0.22	0.22	0	0.03	0.03	0	0	0.32	0.32	0.36	0.36	0.36	0.04	0.01	0.01	0	0	0.19	0.19	0.19
-.12	0.08	0.08	0	0.01	0.01	0	0	0.03	0.03	0.11	0.11	0.11	0	0	0	0	0	0.03	0.03	0.03
-.16	0.01	0.01	0	0	0	0	0	0.01	0.01	0.06	0.06	0.06	0	0	0	0	0	0.01	0.01	0.01
-.20	0.01	0.01	0	0	0	0	0	0.03	0.03	0.04	0.04	0.04	0	0	0	0	0	0.01	0.01	0.01
-.24	0.01	0.01	0	0	0	0	0	0.01	0.01	0.02	0.02	0.02	0	0	0	0	0	0	0	0
-.28	0.01	0.01	0	0	0	0	0	0	0	0.01	0.01	0.01	0	0	0	0	0	0	0	0
-.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	105.51	104.07	104.07	74.64	87.46	87.46	132.30	132.30	495.03	495.03	663.54	663.54	0.33	0.33	1765.59	1765.59	1765.59	1765.59
FLIGHT MILES @ ALT	18522.12	26173.93	26173.93	33995.36	33995.36	28461.45	36365.13	36365.13	58863.40	58863.40	223579.81	223579.81	296925.11	296925.11	146.91	146.91	723033.21	723033.21	723033.21	723033.21
TOTAL FLIGHTS																				985
TOTAL FLIGHT HOURS FLAPS UP AND DOWN																				1765.59
TOTAL FLIGHT MILES FLAPS UP AND DOWN																				723033.21

(a) a<sub>y</sub> Level crossing counts per hour within pressure altitude bands

Figure 14.- Lateral acceleration exceedances.

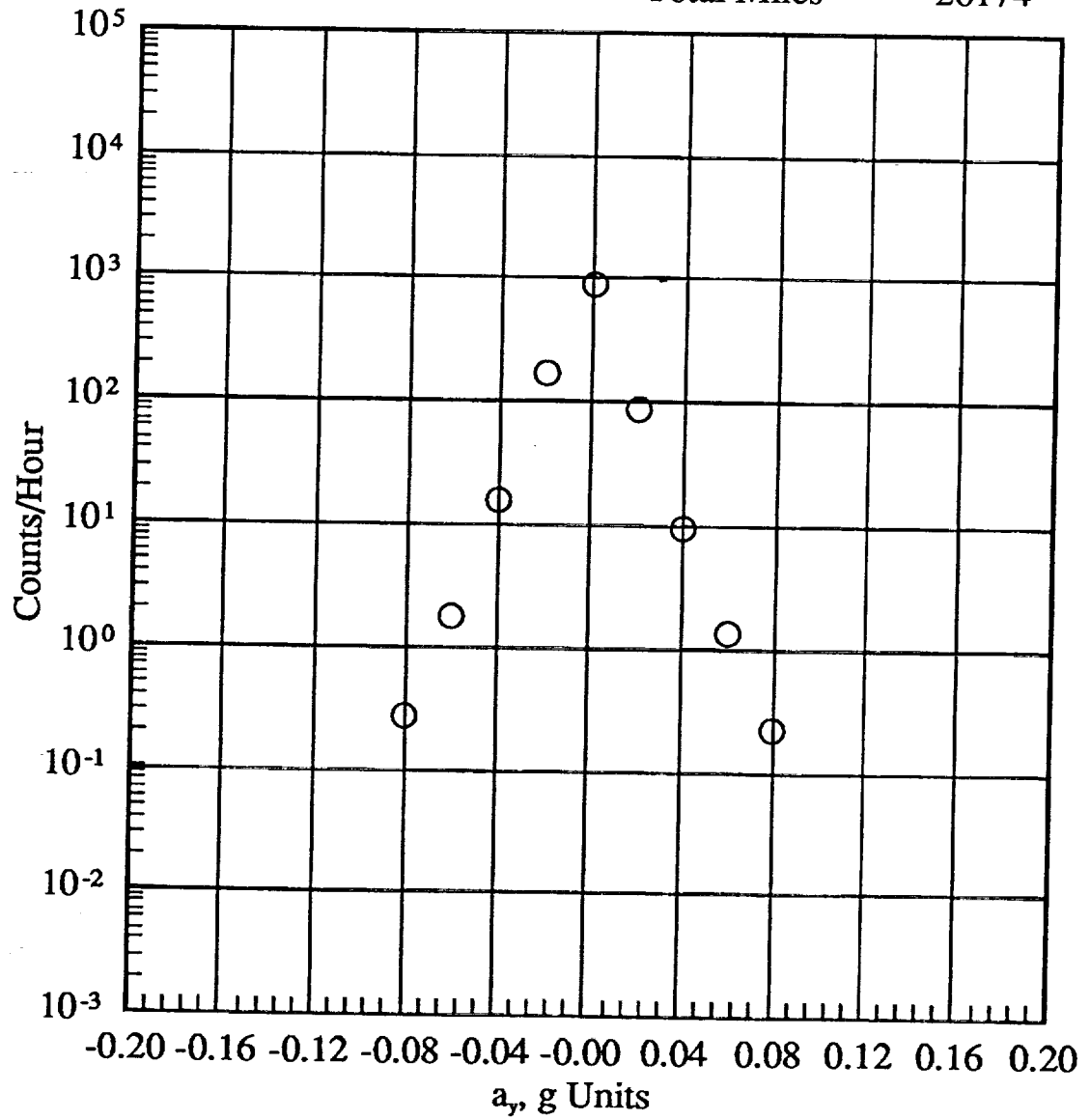
Total Flights	985
Total Hours	102.71
Total Miles	18522



(b) -500 to 4500 feet altitude

Figure 14.- Continued.

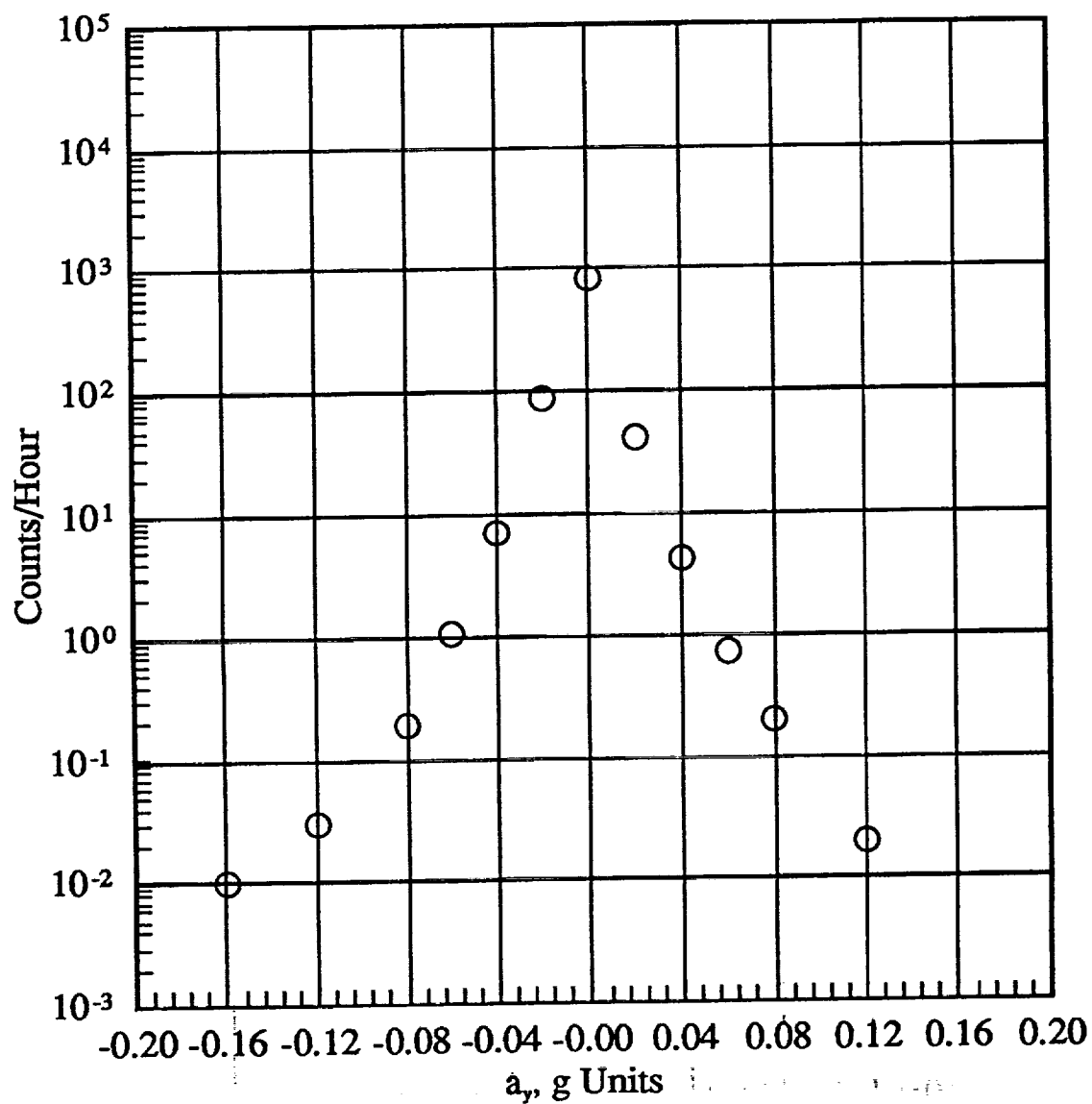
Total Flights 985  
Total Hours 105.51  
Total Miles 26174



(c) 4500 to 9500 feet altitude

Figure 14.- Continued.

Total Flights	985
Total Hours	104.07
Total Miles	33995

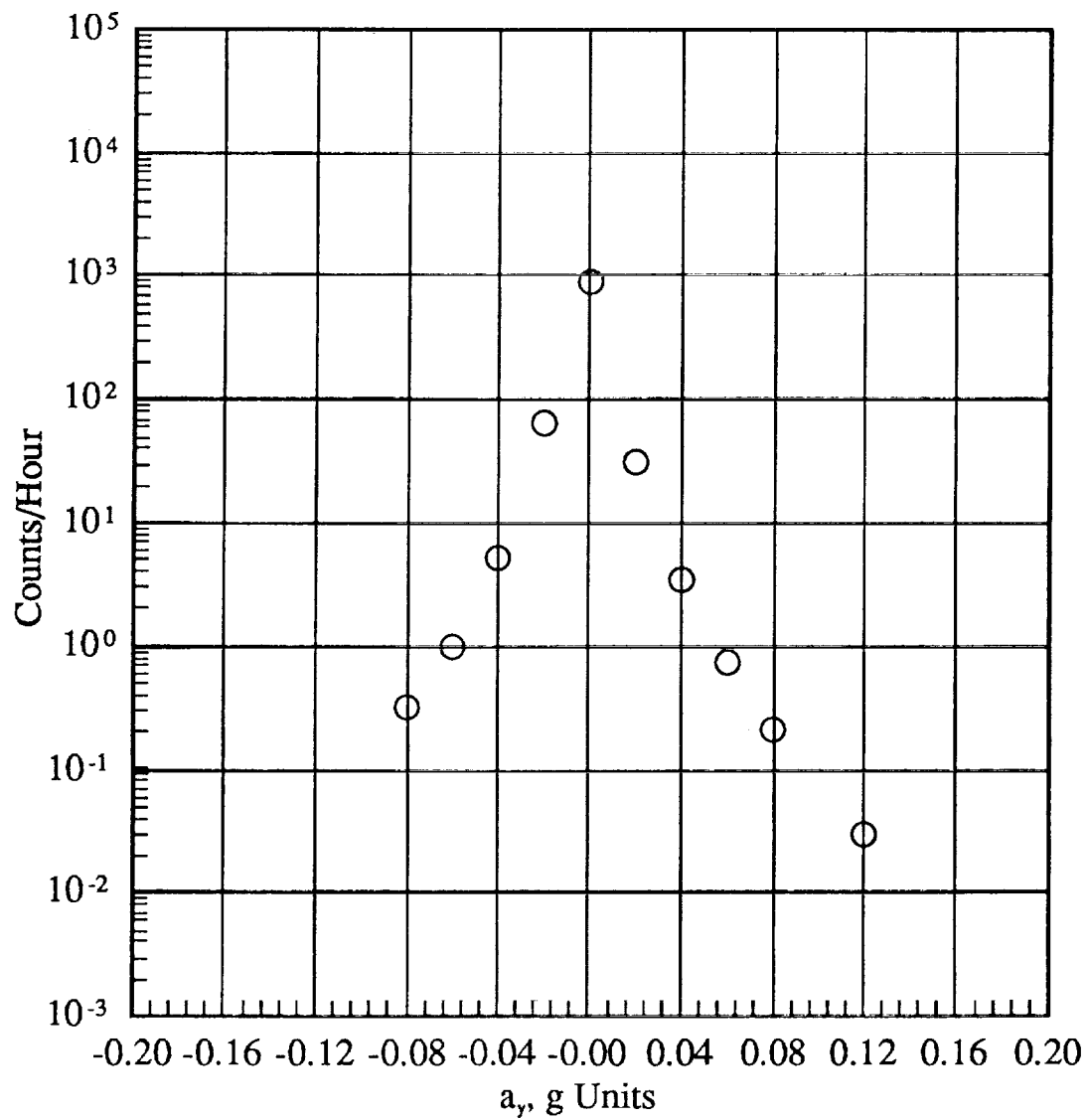


(d) 9500 to 14500 feet altitude

Figure 14.- Continued.



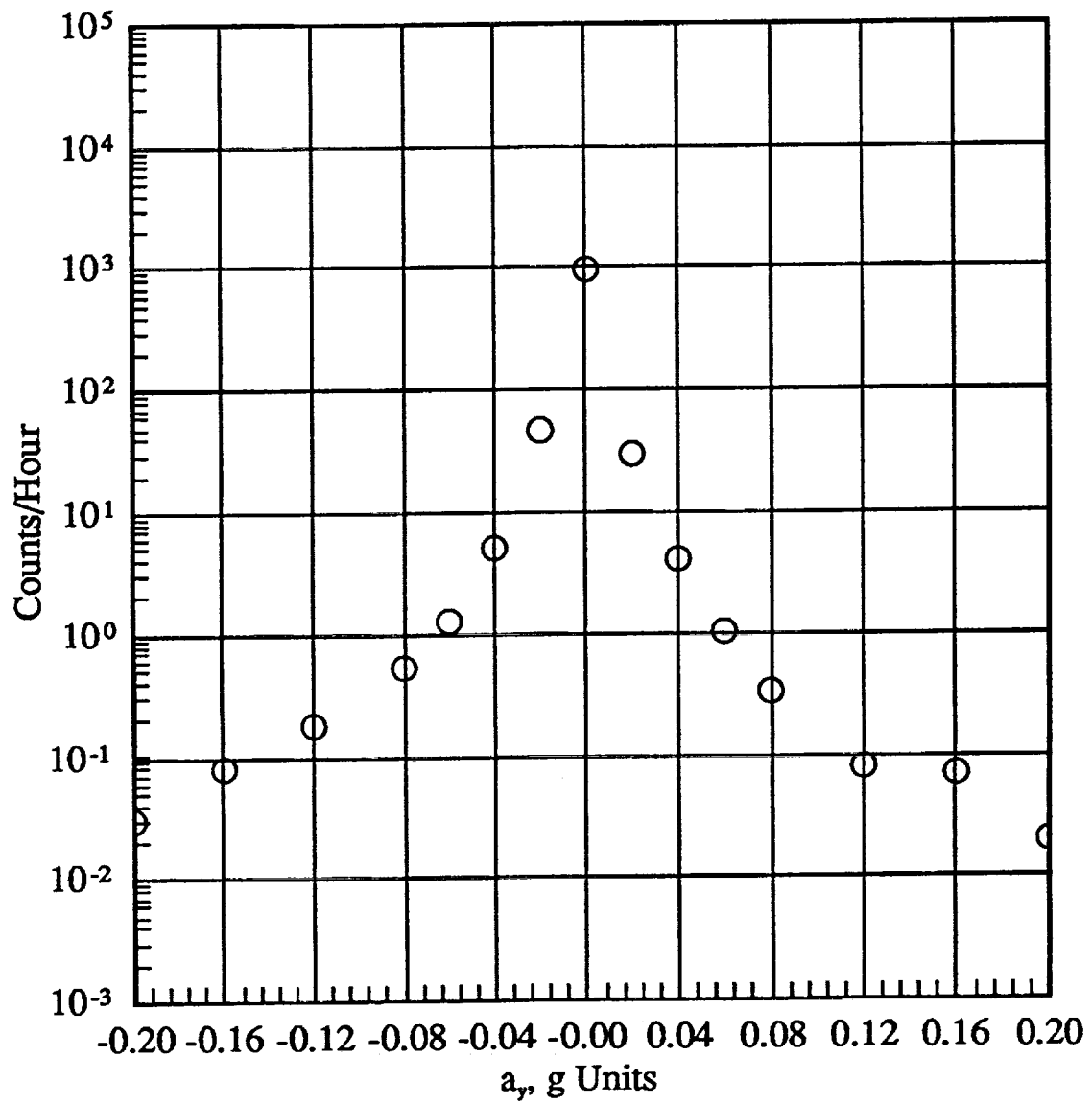
Total Flights	985
Total Hours	74.64
Total Miles	28461



(e) 14500 to 19500 feet altitude

Figure 14.- Continued.

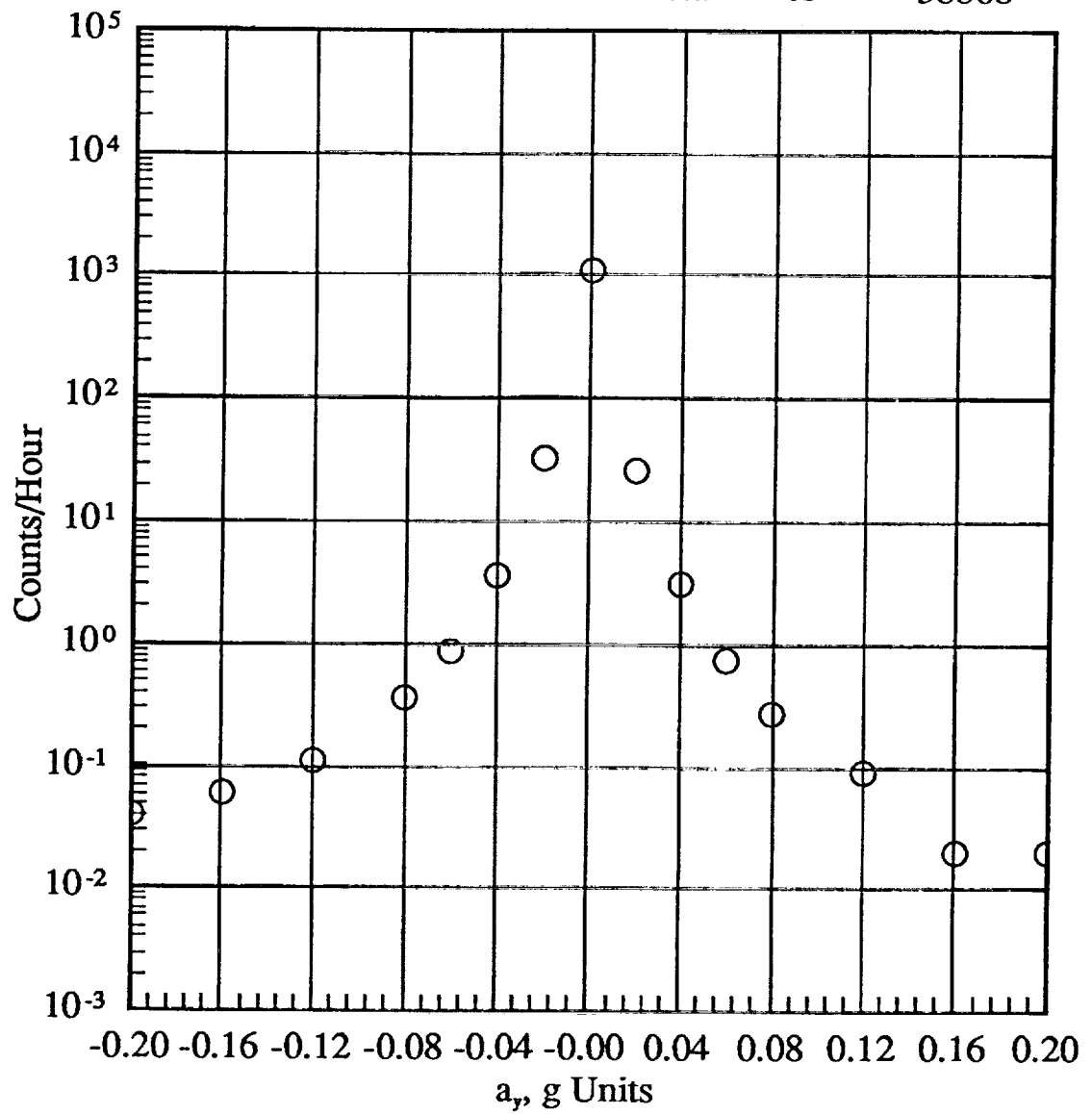
Total Flights	985
Total Hours	87.46
Total Miles	36365



(f) 19500 to 24500 feet altitude

Figure 14.- Continued.

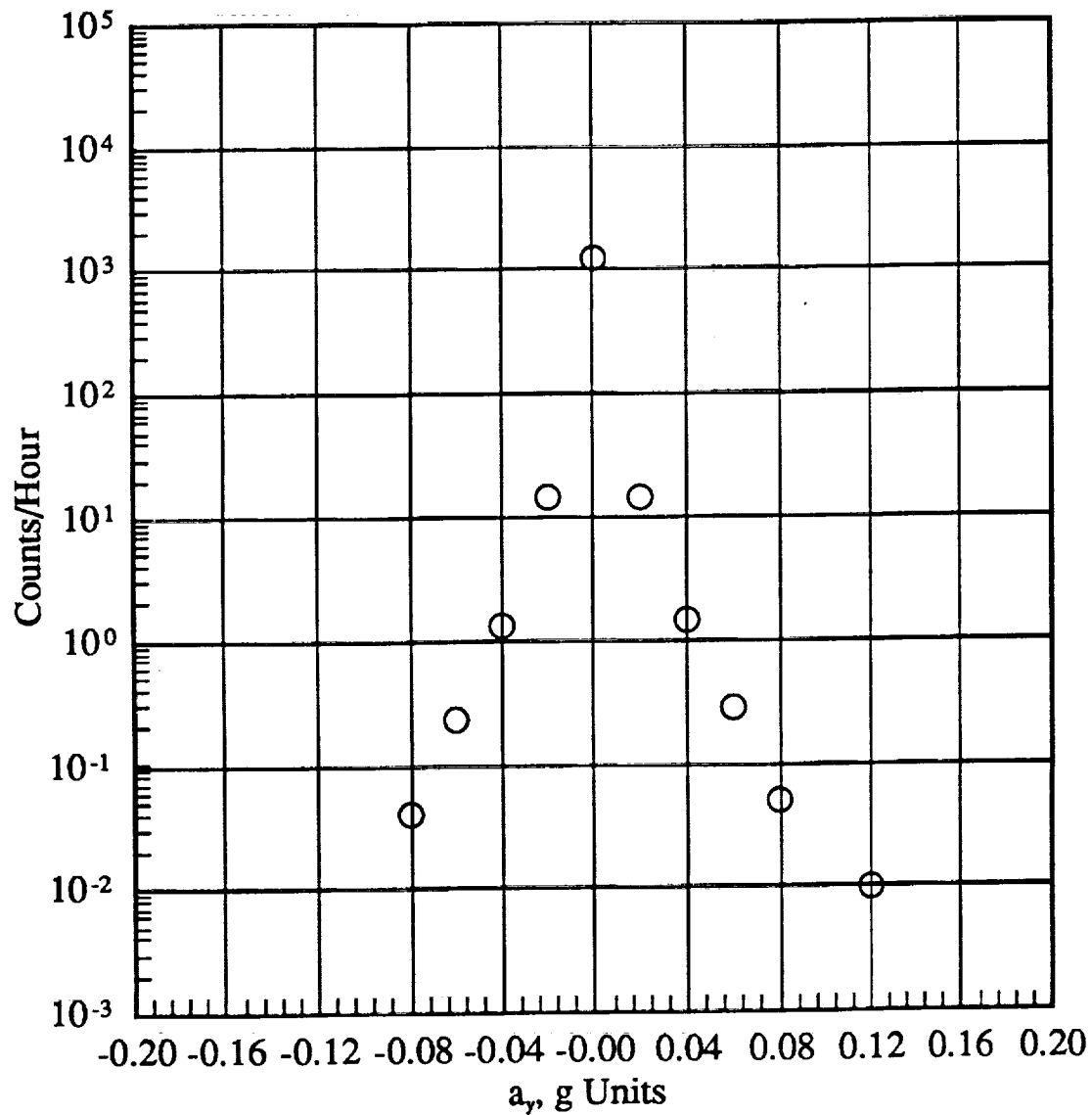
Total Flights	985
Total Hours	132.30
Total Miles	58868



(g) 24500 to 29500 feet altitude

Figure 14.- Continued.

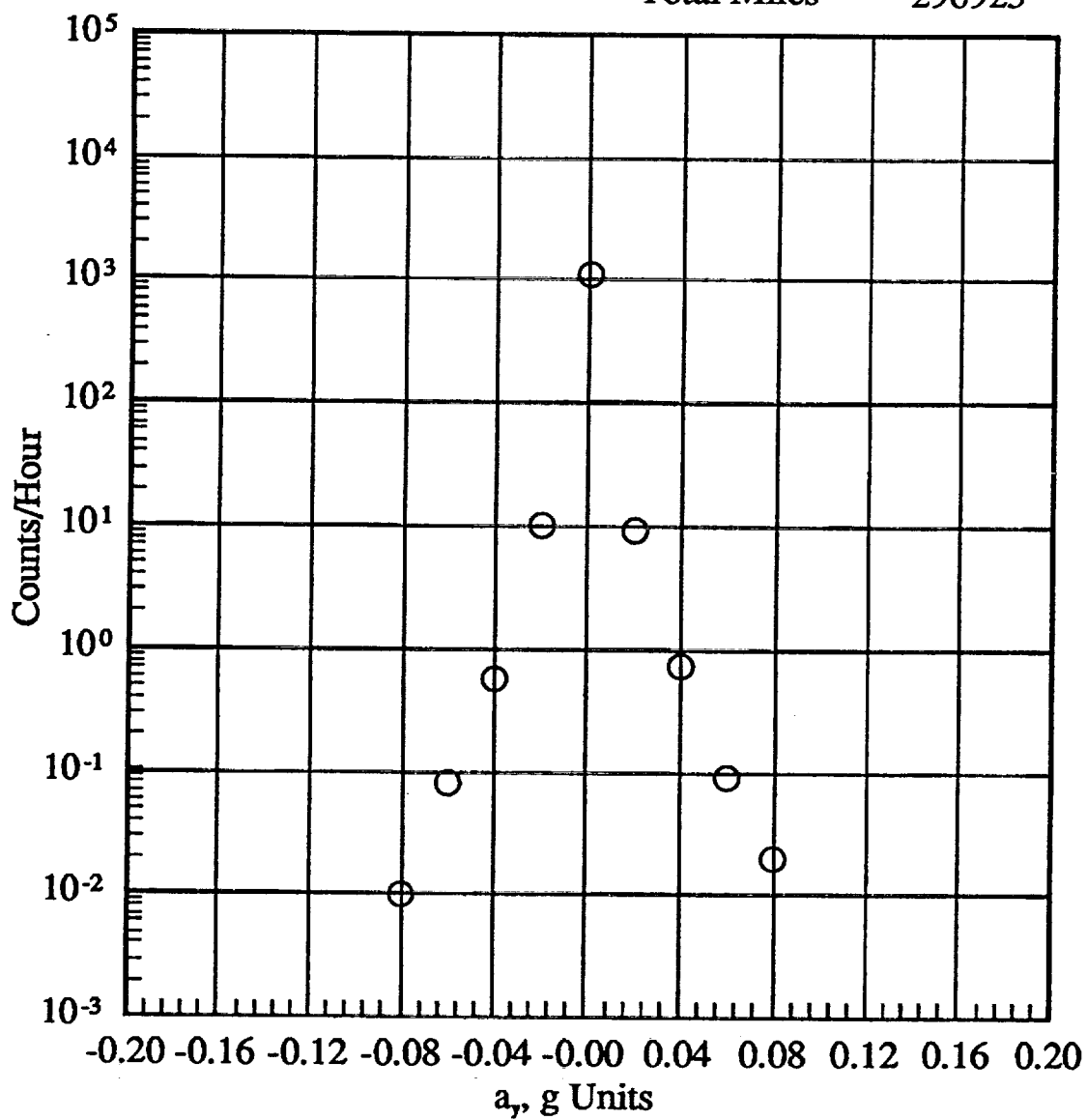
Total Flights	985
Total Hours	495.03
Total Miles	223580



(h) 29500 to 34500 feet altitude

Figure 14.- Continued.

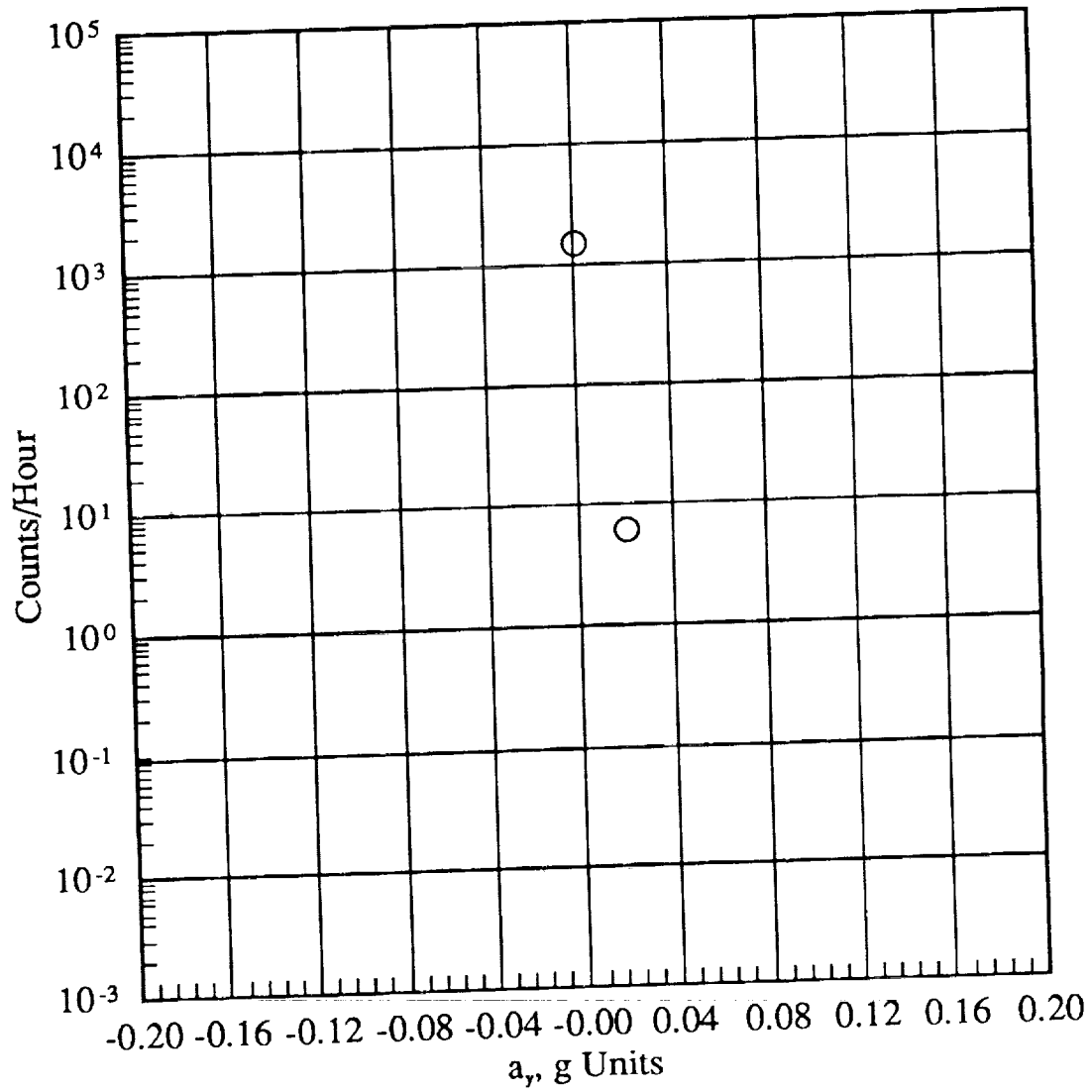
Total Flights	985
Total Hours	663.54
Total Miles	296925



(i) 34500 to 39500 feet altitude

Figure 14.- Continued.

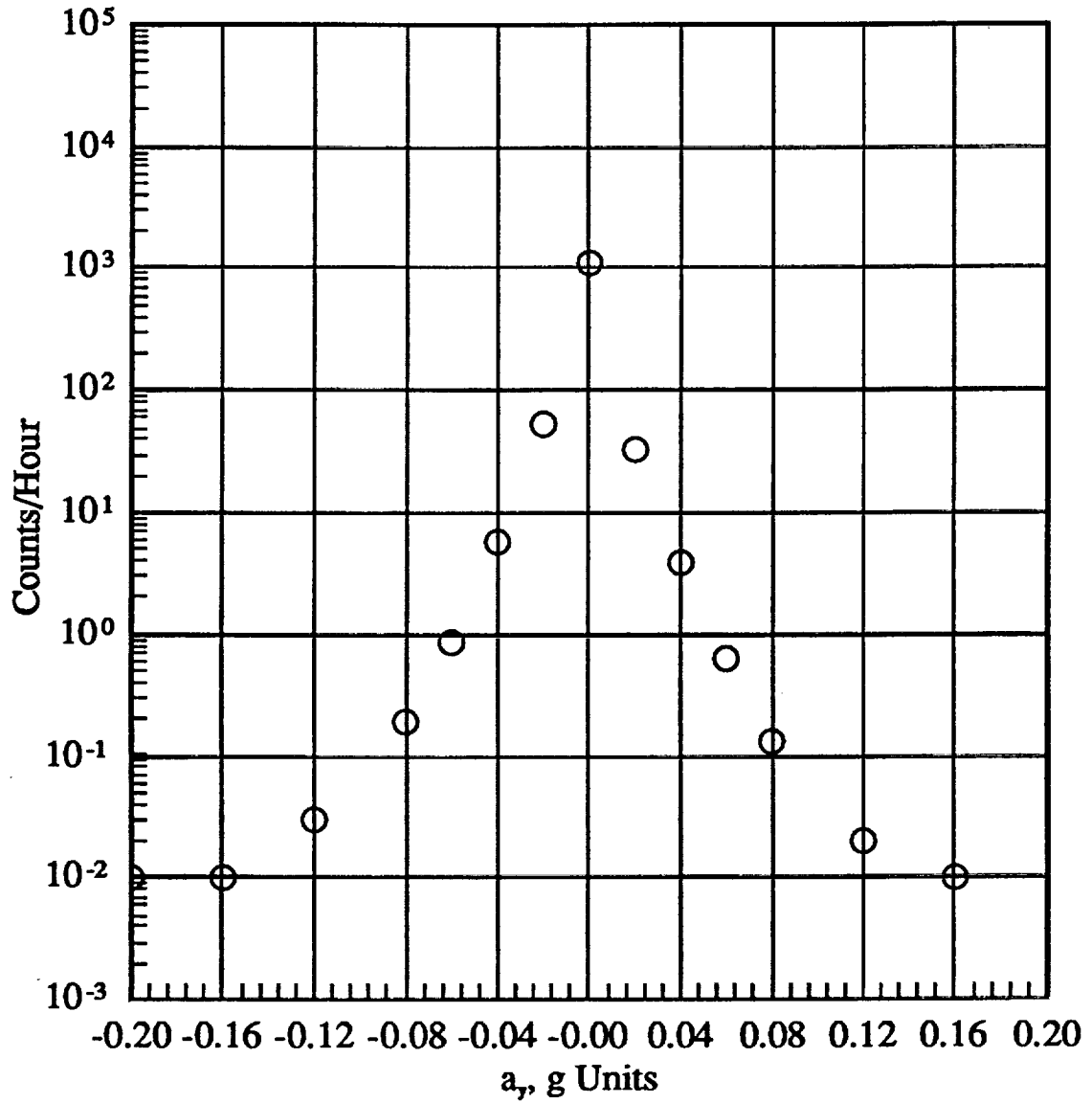
Total Flights 985  
Total Hours 0.33  
Total Miles 147



(j) 39500 to 44500 feet altitude

Figure 14.- Continued.

Total Flights	985
Total Hours	1765.59
Total Miles	723033.21



(k) -500 to 44500 feet altitude

Figure 14.- Concluded.

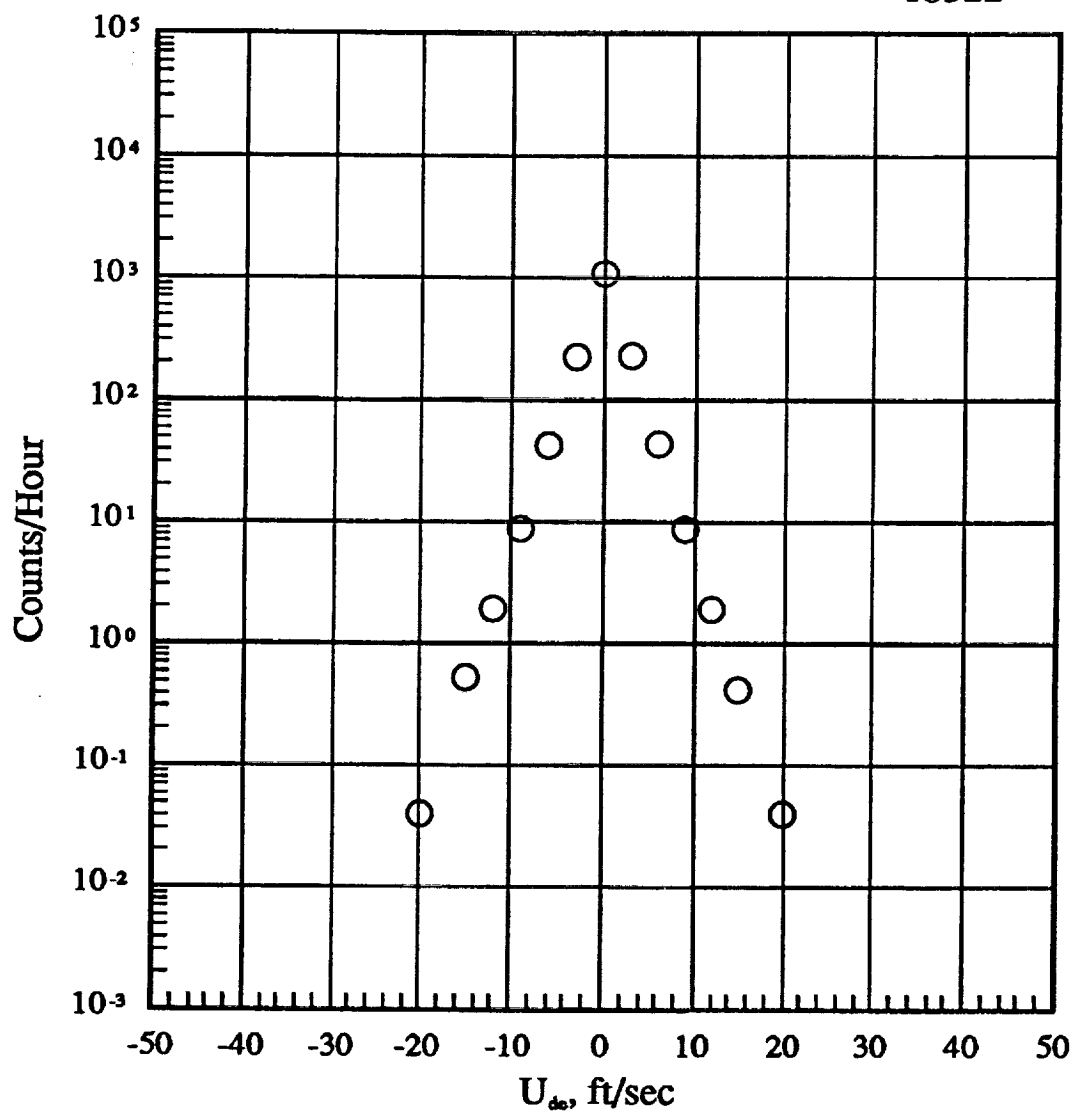
U <sub>de</sub> DERIVED GUST VELOCITY LEVEL FT/SEC		PRESSURE ALTITUDE BANDS													
		-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	44500 TO 49500 FT	49500 TO 54500 FT	54500 TO 59500 FT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0
20	0.04	0	0	0	0	0.05	0.02	0	0	0	0	0	0.01	0	0
15	0.42	0.08	0.07	0.03	0.10	0.10	0.05	0	0	0	0	0	0.04	0	0
12	1.92	0.36	0.22	0.08	0.18	0.11	0.11	0.01	0	0	0	0	0.17	0	0
9	8.75	2.00	0.75	0.24	0.56	0.28	0.28	0.03	0.01	0	0	0	0.74	0	0
6	43.58	10.39	3.58	1.63	1.88	1.18	0.22	0.10	0	0	0	0	3.72	0	0
3	228.43	73.75	30.02	16.55	13.17	8.59	3.64	1.70	0	0	0	0	23.12	0	0
0	1083.63	1139.33	1258.02	1521.30	1615.16	1749.36	1896.69	1848.57	2068.12	1707.62	22.88	3.64	0.76	0.05	0.01
-3	223.92	74.65	30.31	16.53	13.55	8.53	3.50	1.67	0	0	0	0	0.01	0	0
-6	42.44	10.08	3.65	1.76	1.73	1.06	0.25	0.11	0	0	0	0	0.01	0	0
-9	8.84	2.03	0.80	0.42	0.59	0.29	0.03	0.01	0	0	0	0	0.01	0	0
-12	1.94	0.40	0.27	0.15	0.25	0.12	0.01	0	0	0	0	0	0.01	0	0
-15	0.53	0.09	0.05	0.04	0.13	0.07	0	0	0	0	0	0	0.01	0	0
-20	0.04	0.01	0.01	0.01	0.06	0.04	0	0	0	0	0	0	0.01	0	0
-30	0	0	0	0	0.01	0.01	0	0	0	0	0	0	0	0	0
-40	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0
-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL FLIGHTS		102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59	985	1765.59	0.33	1765.59
TOTAL FLIGHT HOURS FLAPS UP AND DOWN		18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21	985	723033.21	146.91	723033.21
TOTAL FLIGHT MILES FLAPS UP AND DOWN															

(a) U<sub>de</sub> Level crossing counts per hour withing pressure altitude bands

Figure 15.- U<sub>de</sub> exceedances.



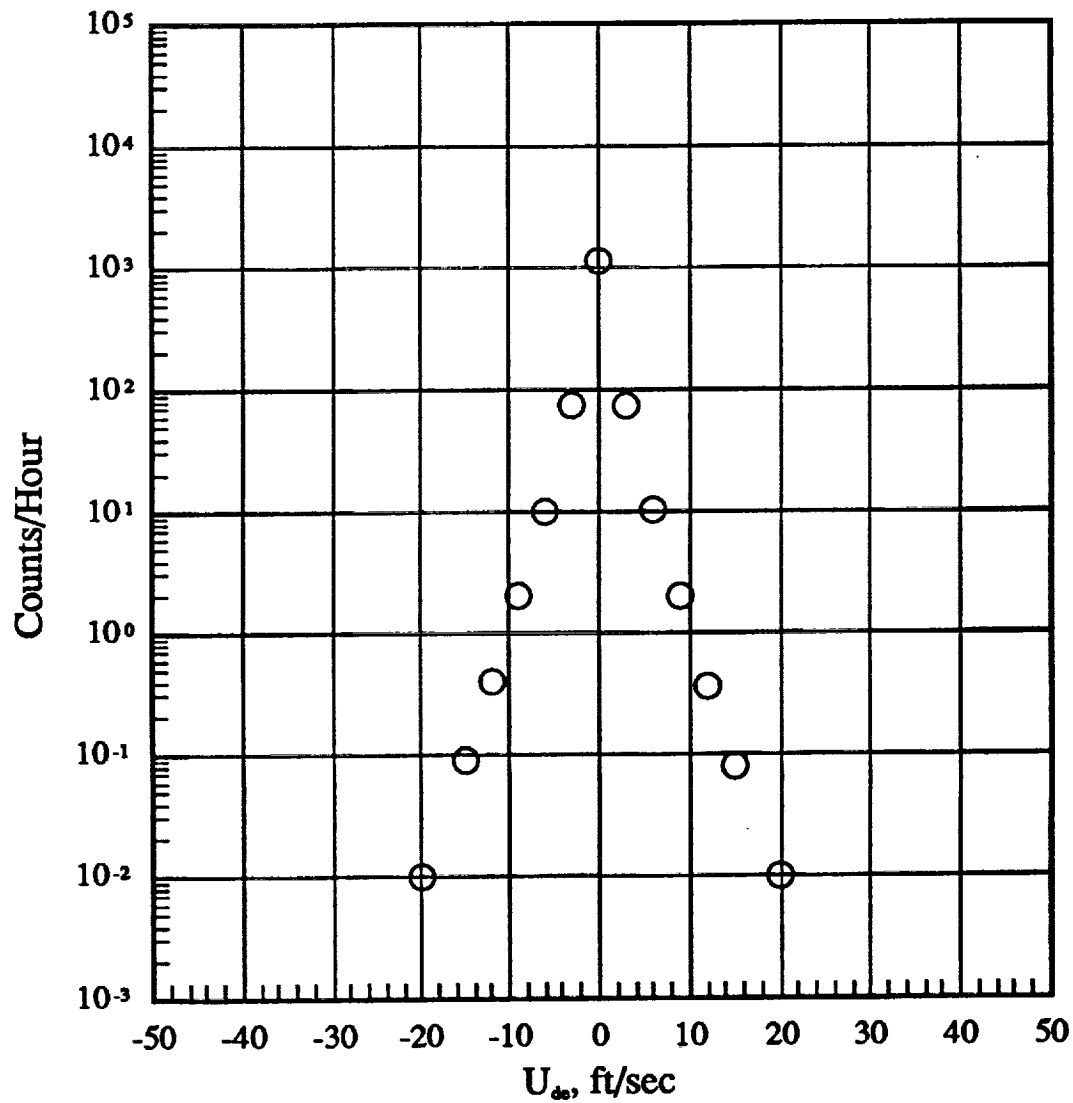
Total Flights	985
Total Hours	102.71
Total Miles	18522



(b) -500 to 4500 feet altitude

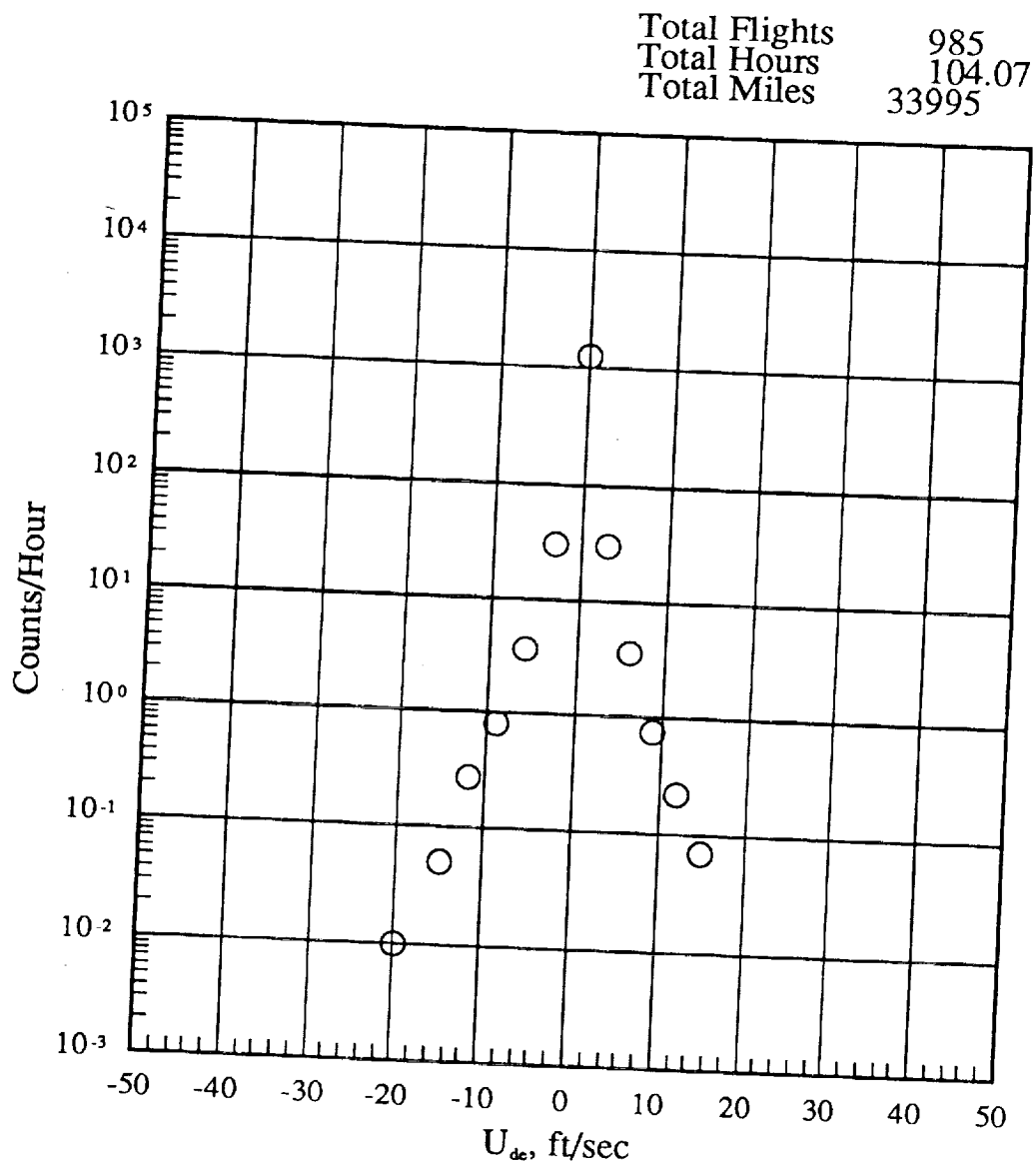
Figure 15.- Continued.

Total Flights	985
Total Hours	105.51
Total Miles	26174



(c) 4500 to 9500 feet altitude

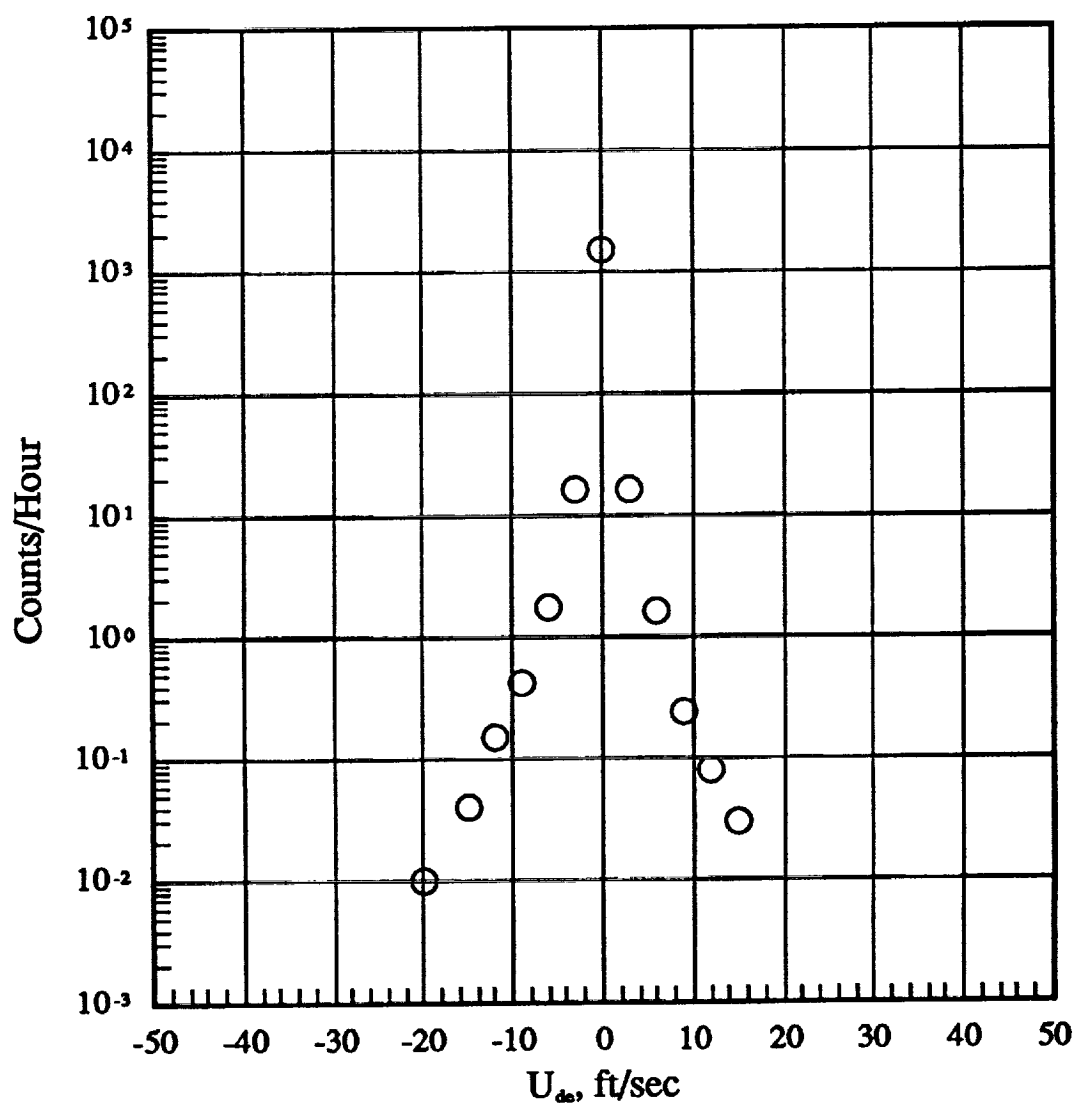
Figure 15.- Continued.



(d) 9500 to 14500 feet altitude

Figure 15.- Continued.

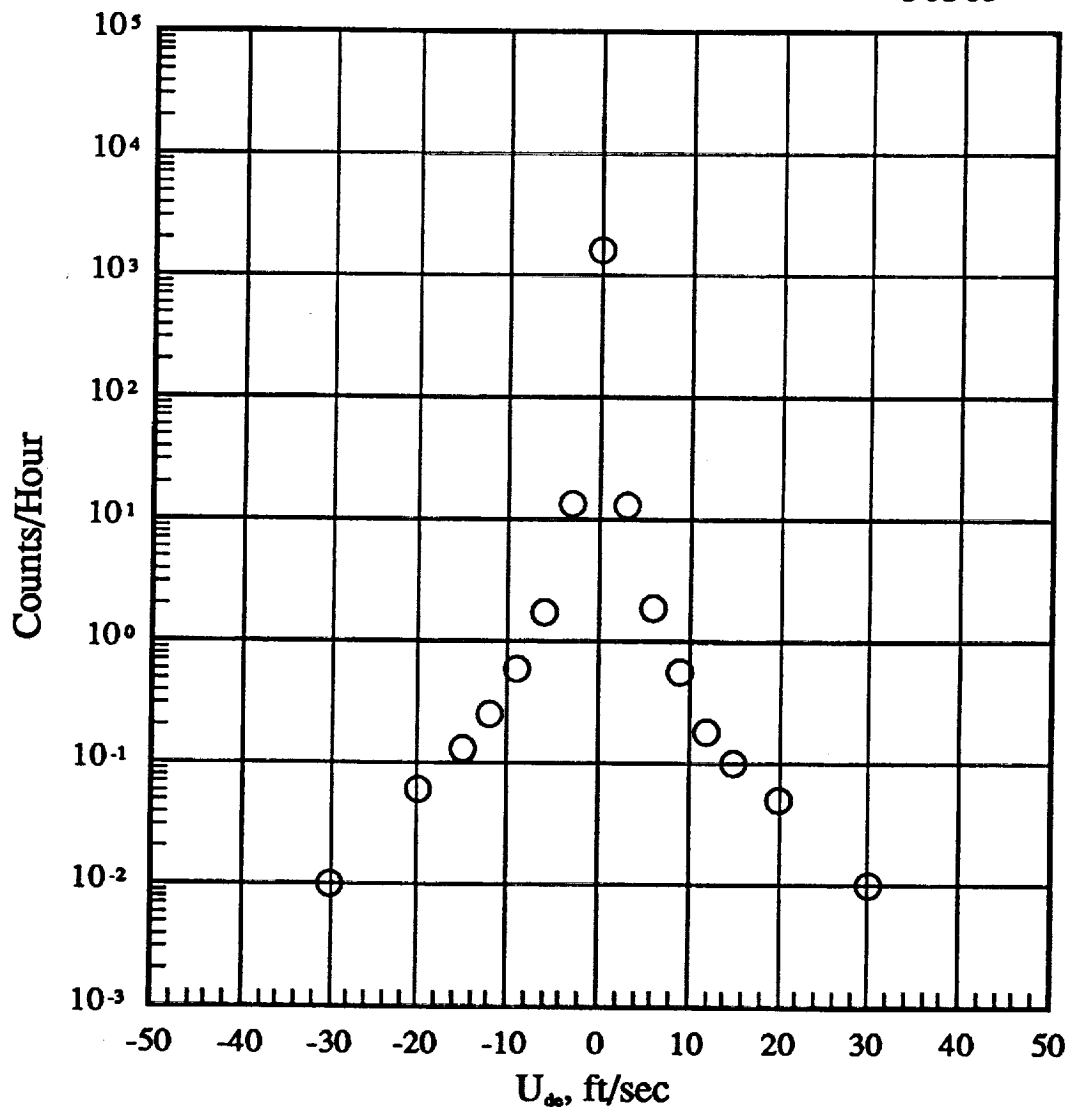
Total Flights	985
Total Hours	74.64
Total Miles	28461



(e) 14500 to 19500 feet altitude

Figure 15.- Continued.

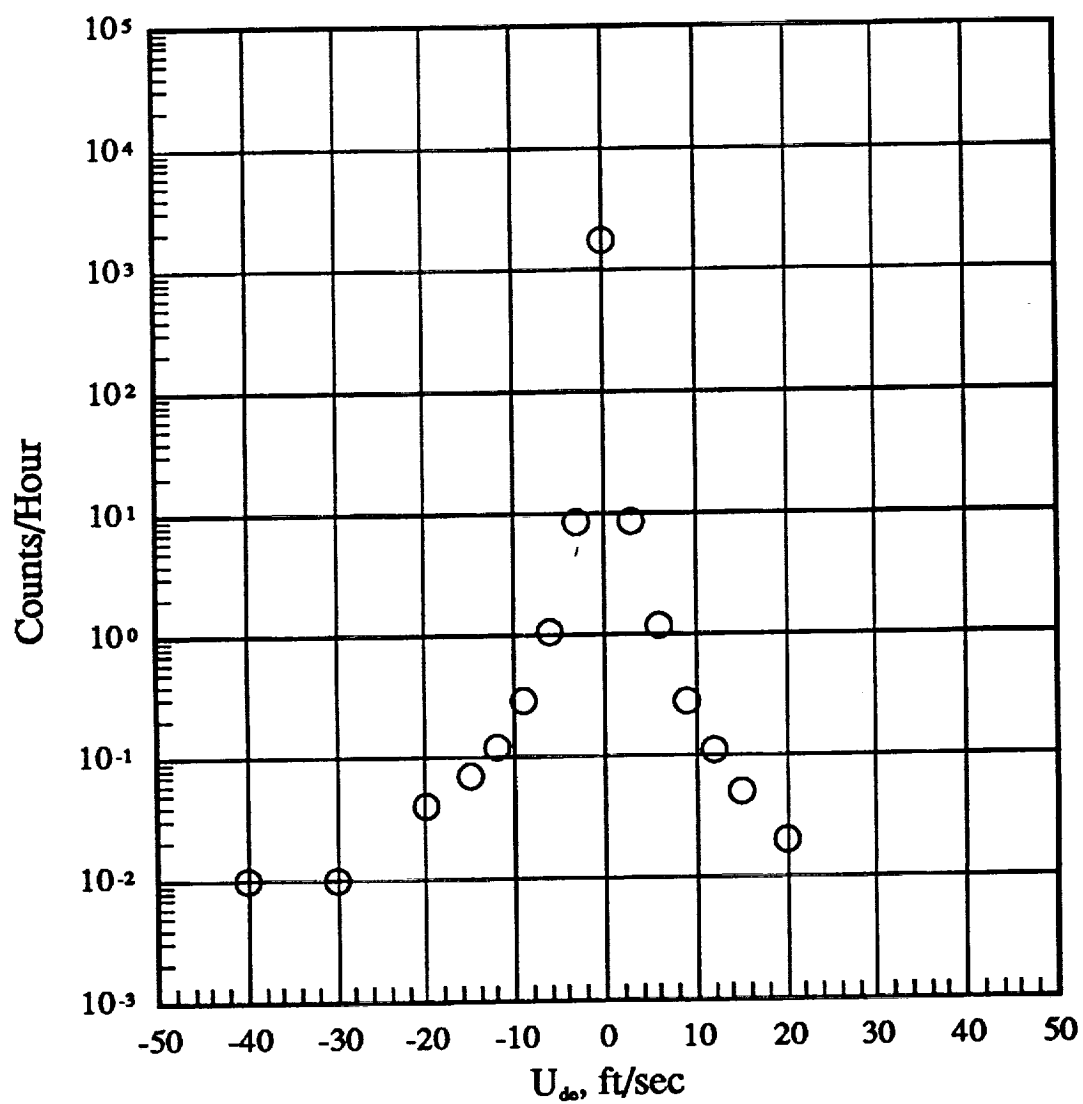
Total Flights	985
Total Hours	87.46
Total Miles	36365



(f) 19500 to 24500 feet altitude

Figure 15.- Continued.

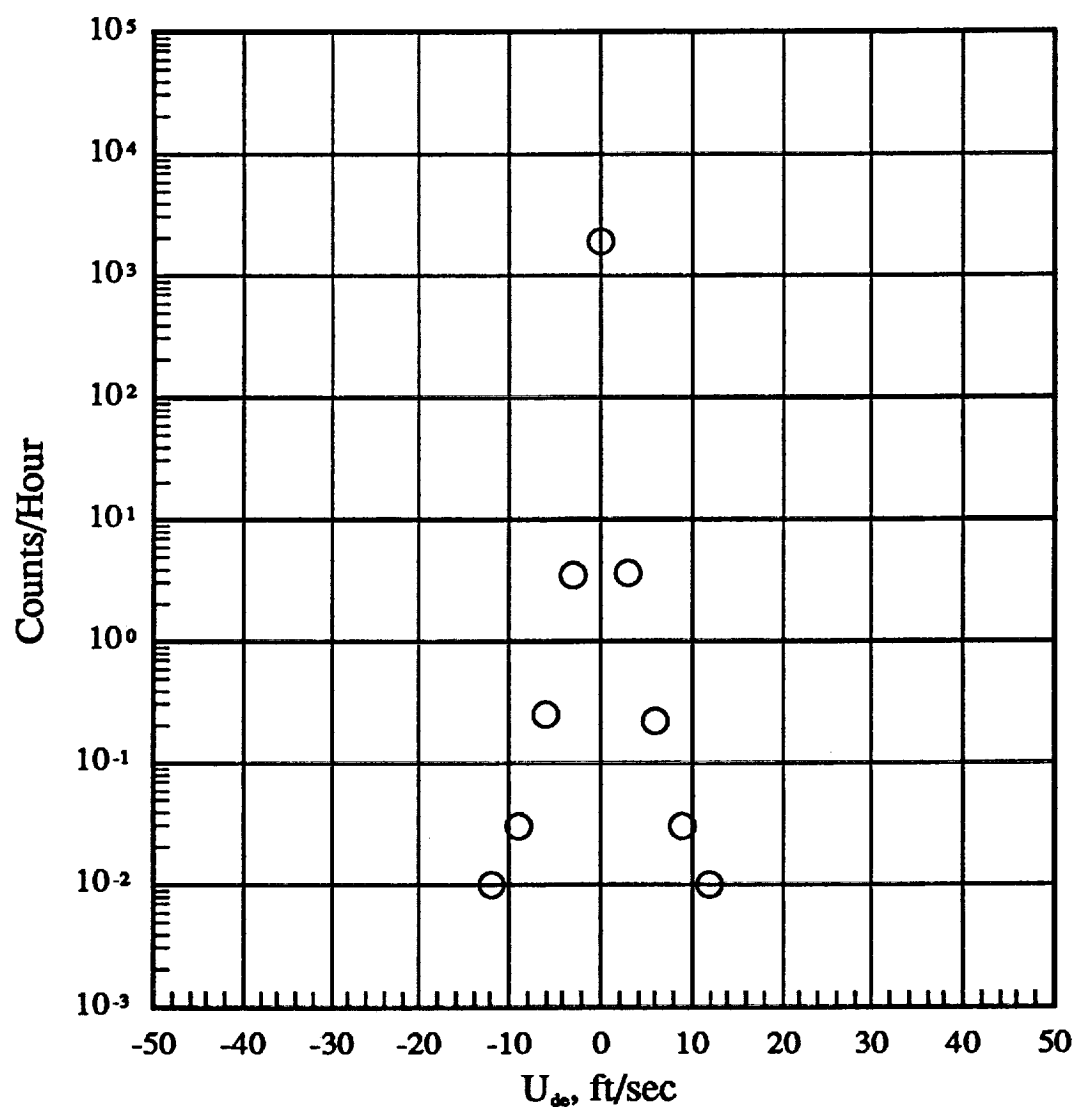
Total Flights	985
Total Hours	132.80
Total Miles	58868



(g) 24500 to 29500 feet altitude

Figure 15.- Continued.

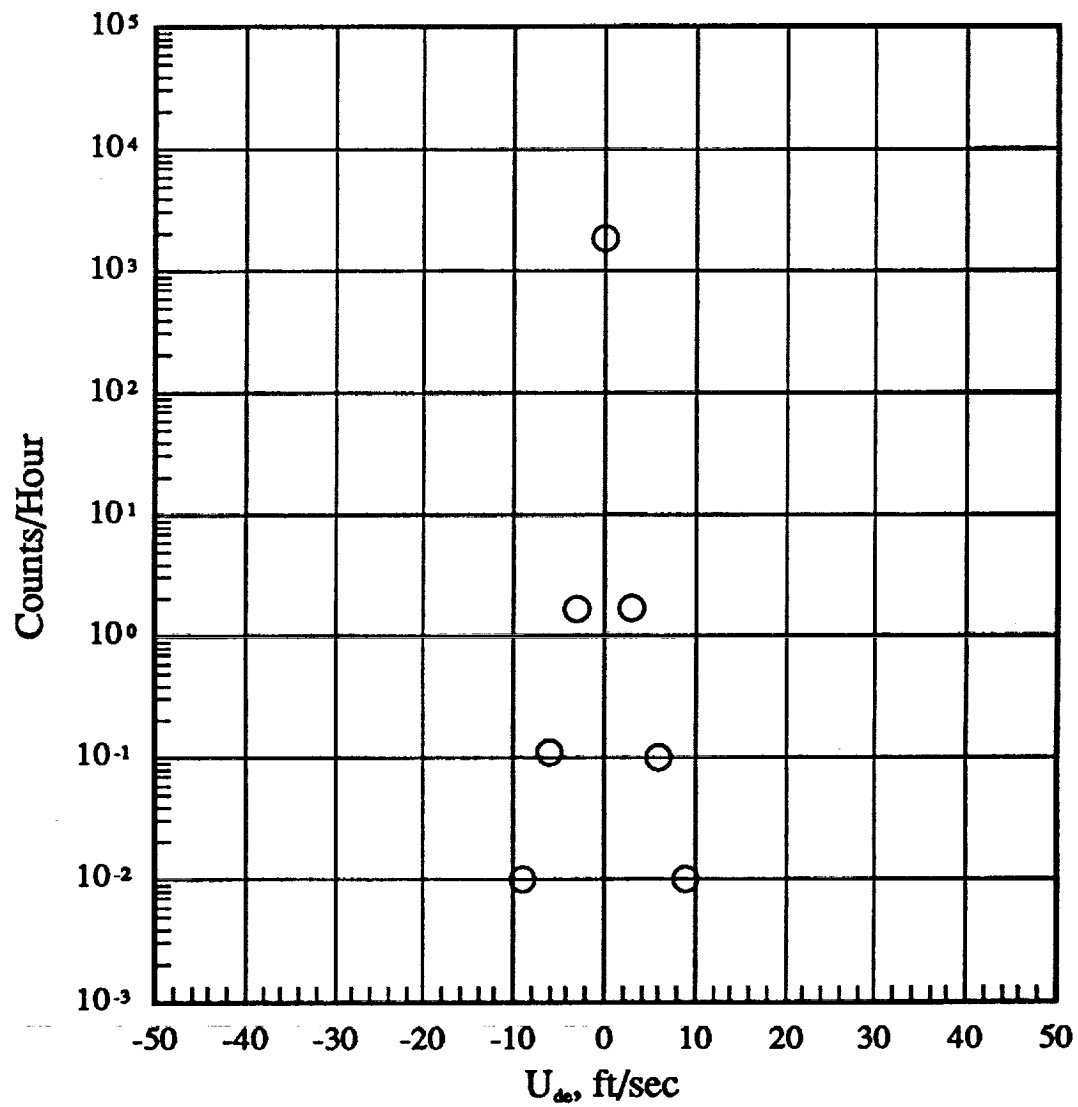
Total Flights	985
Total Hours	465.03
Total Miles	223580



(h) 29500 to 34500 feet altitude

Figure 15.- Continued.

Total Flights	985
Total Hours	663.54
Total Miles	296925

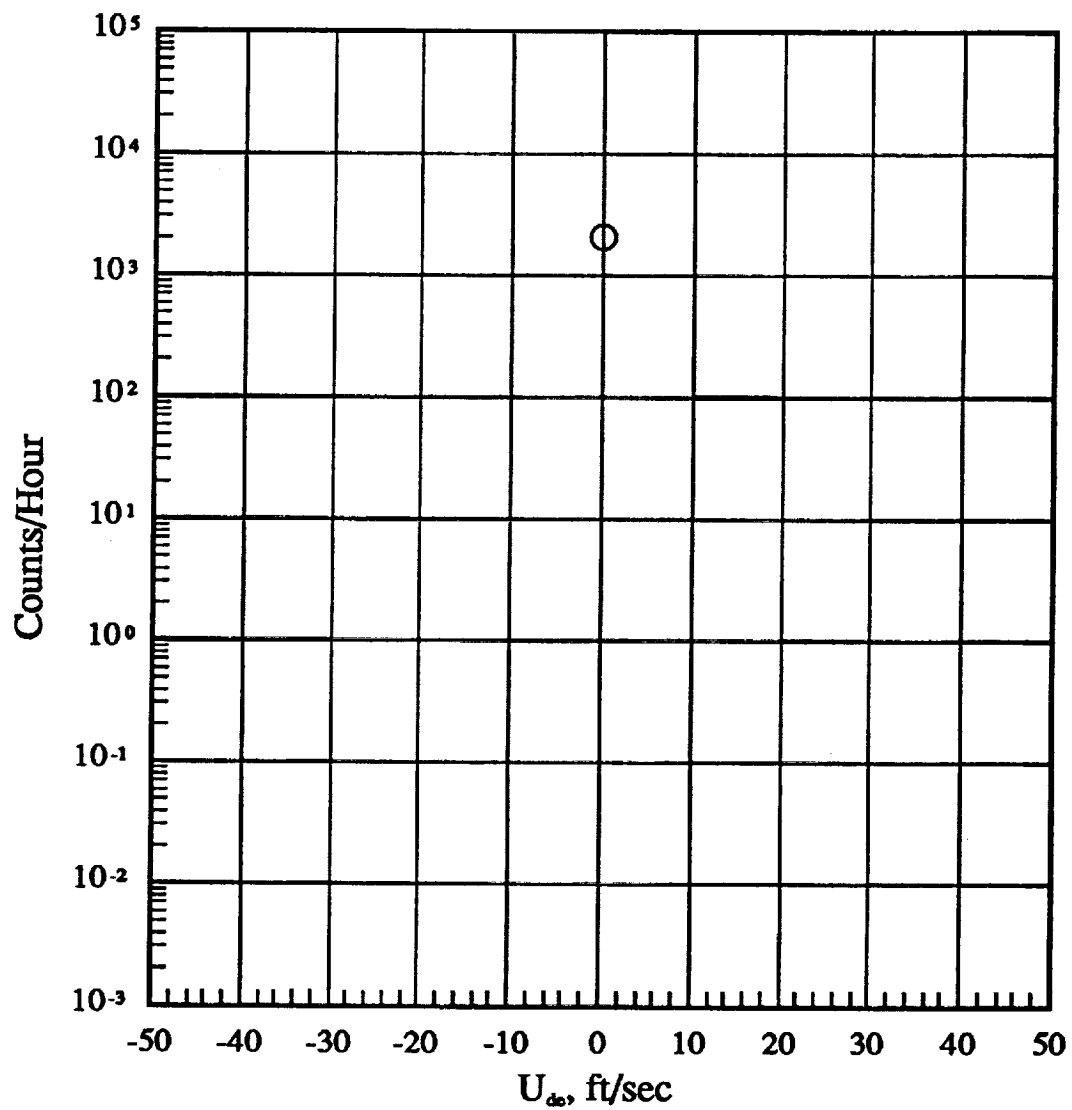


(i) 34500 to 39500 feet altitude

Figure 15.- Continued.



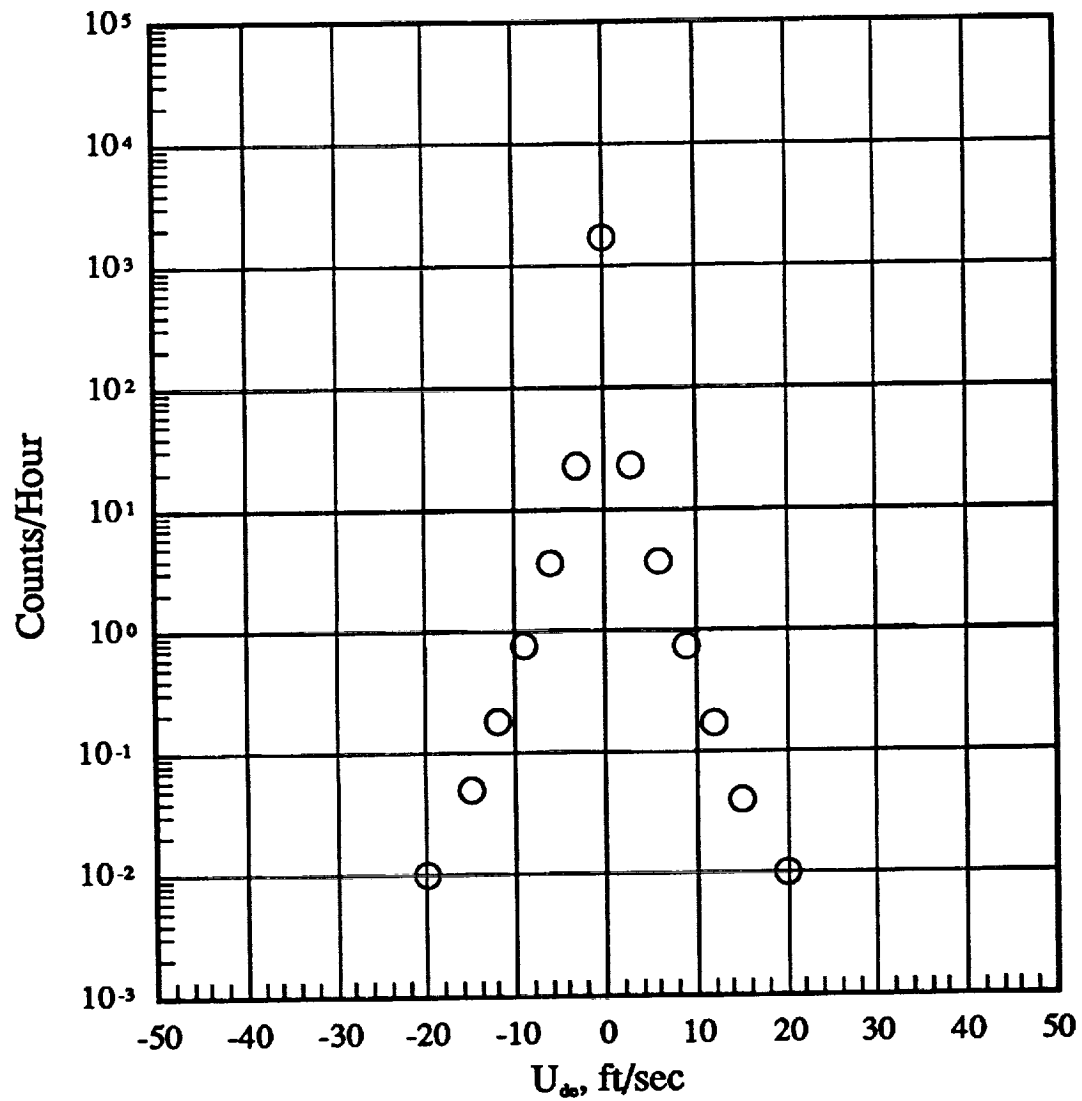
Total Flights	985
Total Hours	147.33
Total Miles	



(j) 39500 to 44500 feet altitude

Figure 15.- Continued.

Total Flights 985  
 Total Hours 1765.59  
 Total Miles 723083



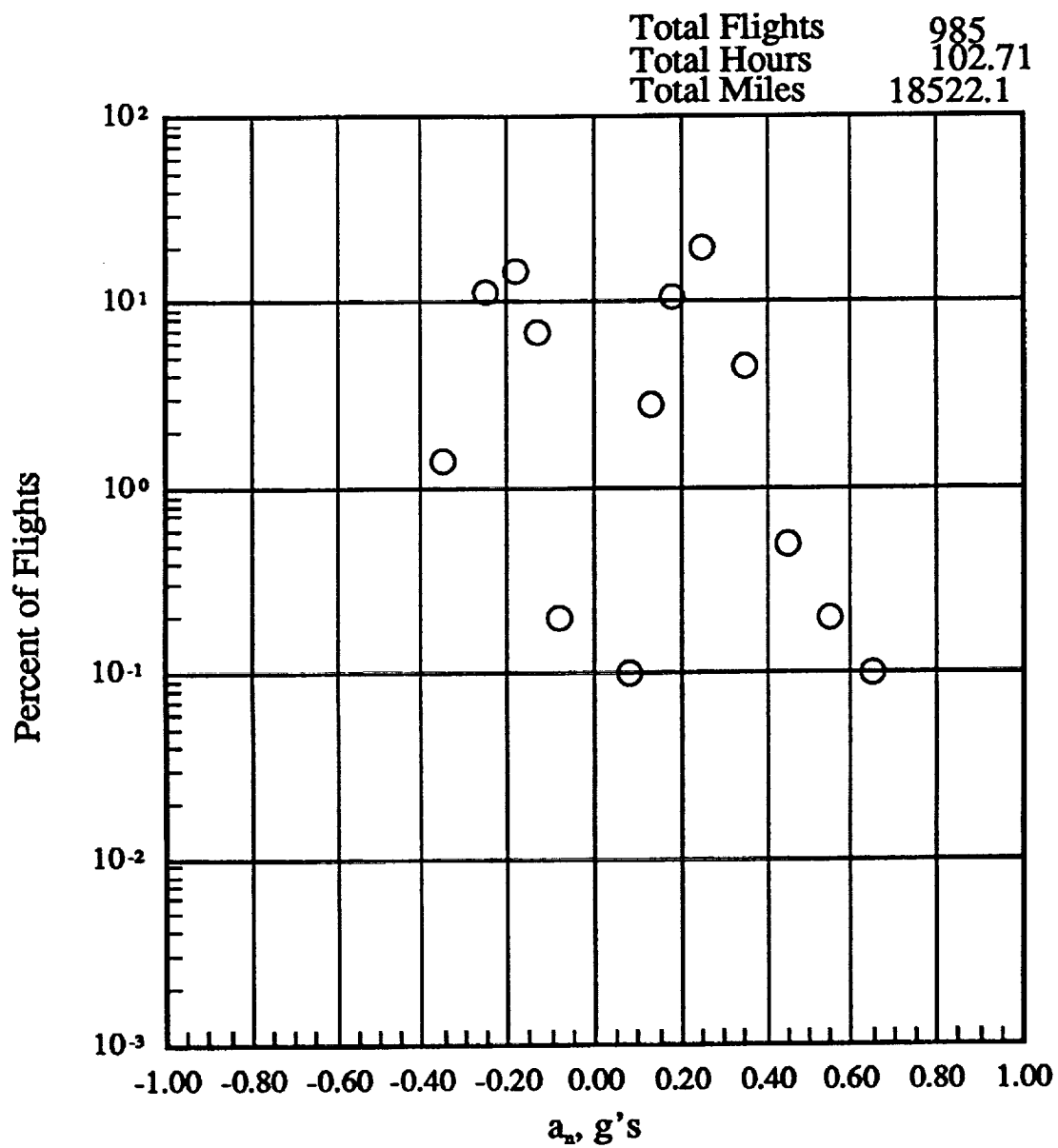
(k) -500 to 44500 feet altitude

Figure 15.- Concluded.

LEVEL FOR EACH FLIGHT		PRESSURE ALTITUDE BANDS												TOTAL FLIGHTS									
		-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		44500 TO			
		4500 FT		9500 FT		14500 FT		19500 FT		24500 FT		29500 FT		34500 FT		39500 FT		44500 FT					
g's FROM	TO																						
	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	.80	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0	0	0.10	0	0
	.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	.60	0.10	0	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	0	0
	.50	0.20	0.10	0.10	0	0.20	0	0	0	0.10	0.10	0.10	0.10	0.10	0.10	0	0	0	0	0	0.80	0	0
	.40	0.50	0.60	0.30	0	0.50	0.10	0	0.10	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0	0	0	0	1.90	0	0
	.30	4.50	3.00	1.20	0.50	2.10	2.20	0.50	2.20	2.00	2.00	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	11.50	0	0
	.20	19.70	12.60	6.70	2.10	2.10	2.20	2.20	2.20	2.20	2.20	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	49.10	0	0
	.15	10.70	6.60	3.90	1.20	0.40	0.40	0.40	1.00	1.00	1.00	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	27.70	0	0
	.10	2.80	2.40	1.10	0.10	0.10	0.10	0.10	0.20	0.20	0.20	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	8.20	0	0
	.05	0.10	0.10	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.40	0	0
	-.05	0.20	0.10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.60	0	0
	-.10	6.90	3.20	3.60	0.40	0.80	0.80	0.80	0.70	0.70	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	20.30	0	0
	-.15	14.80	6.00	5.60	2.60	1.50	1.50	1.50	1.30	1.30	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	38.00	0	0
	-.20	11.40	8.00	4.40	1.80	1.70	1.70	1.70	2.00	2.00	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	33.90	0	0
	-.30	1.40	1.10	1.10	0.20	0.20	0.20	0.20	0.40	0.40	0.60	0.60	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	5.40	0	0
	-.40	0	0.10	0.20	0.20	0.20	0.20	0.20	0.10	0.10	0.20	0.20	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	1.10	0	0
	-.50	0	0	0	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0	0	0	0	0	0	0	0	0.40	0	0
	-.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0	0
	-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-.80	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0	0	0.10	0	0
	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1.20	0	0	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0.10	0	0
	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT		102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59
FLIGHT MILES @ ALT		18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21
		TOTAL FLIGHTS																					985

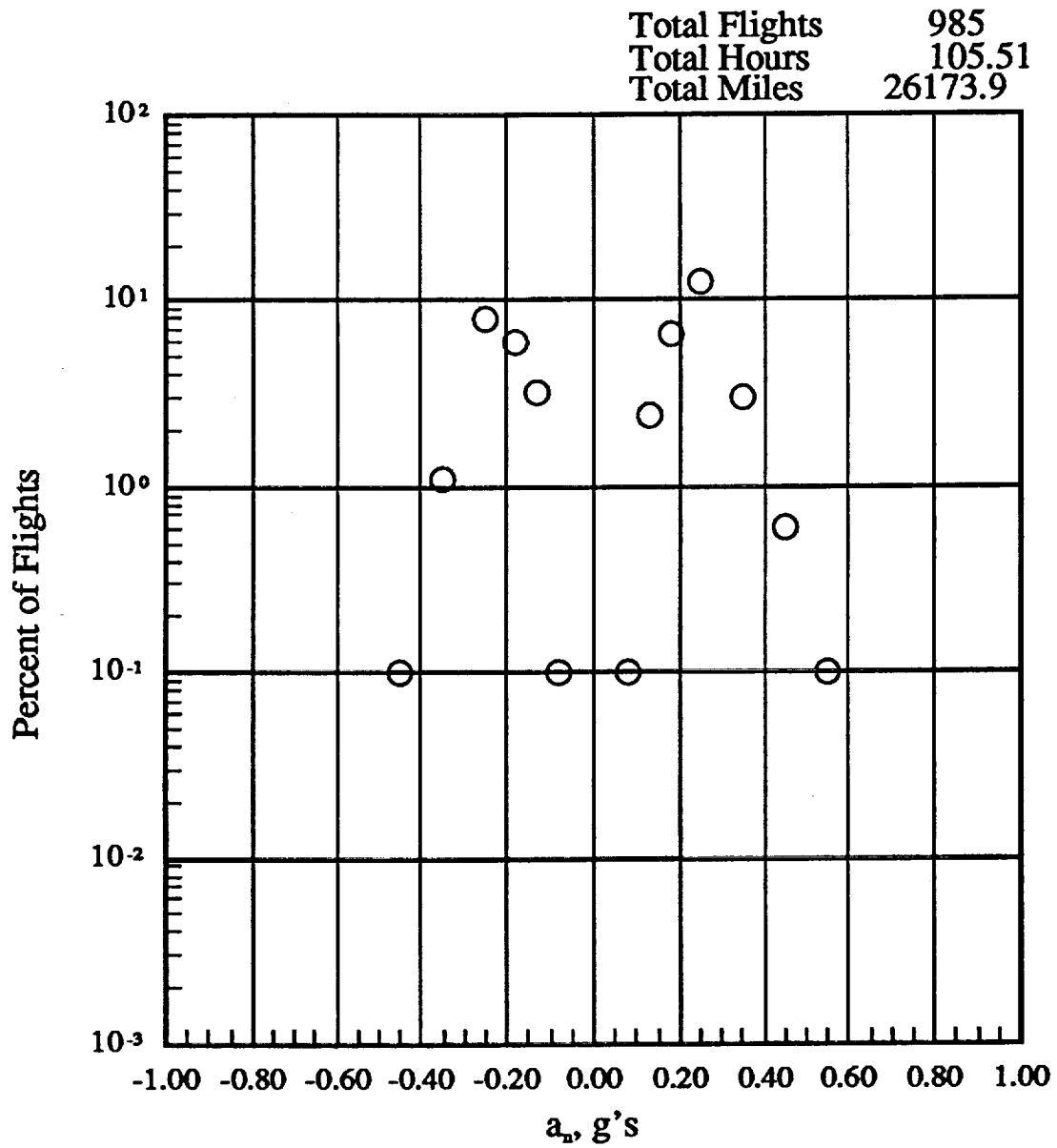
(a) Percent of flights where peak positive and negative  $a_n$  per flight occurs within pressure altitude bands, any flap

Figure 16.- Peak positive and negative  $a_n$  vs altitude.



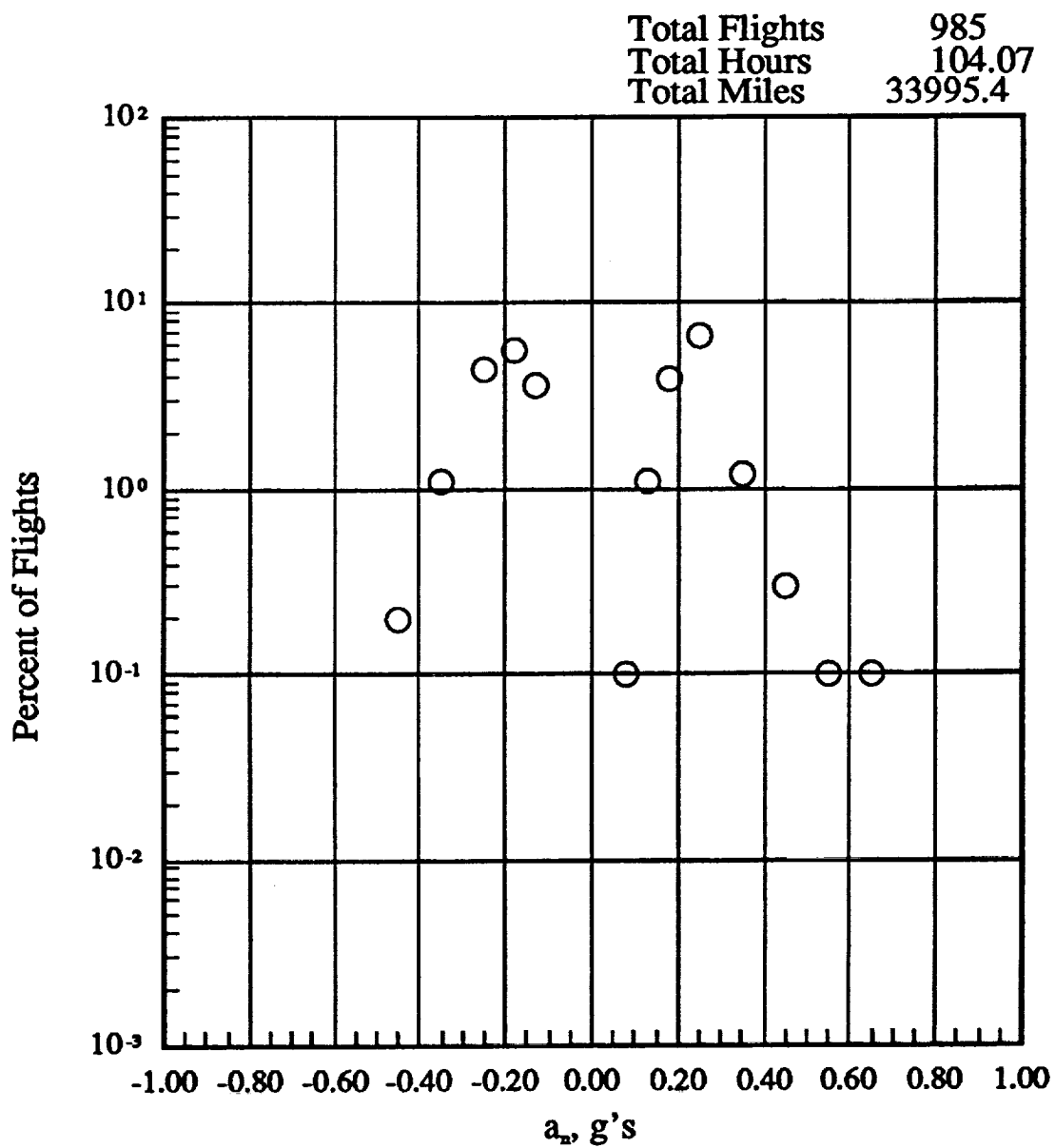
(b) -500 to 4500 feet altitude

Figure 16.- Continued.



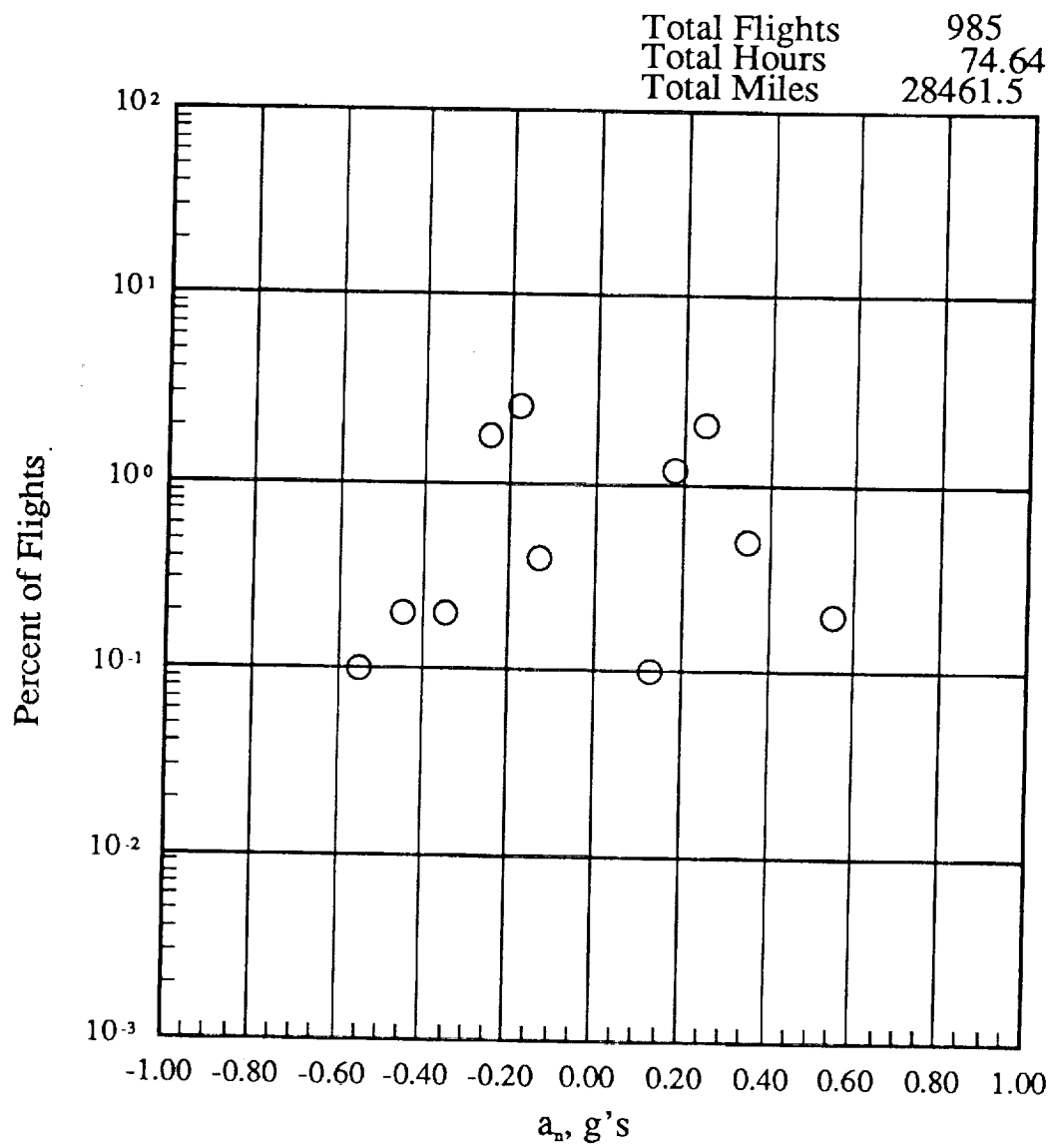
(c) 4500 to 9500 feet altitude

Figure 16.- Continued.



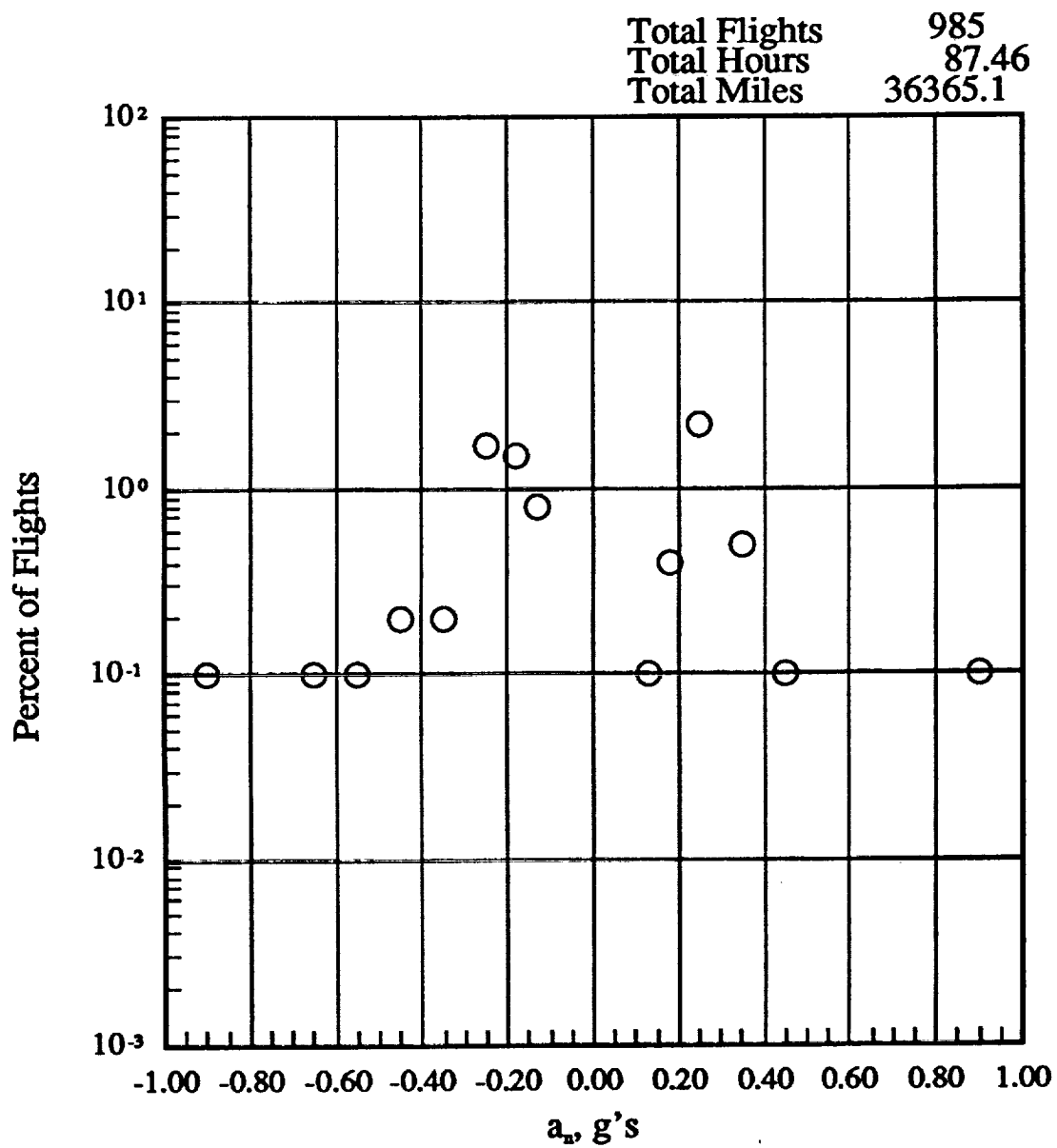
(d) 9500 to 14500 feet altitude

Figure 16.- Continued.



(e) 14500 to 19500 feet altitude

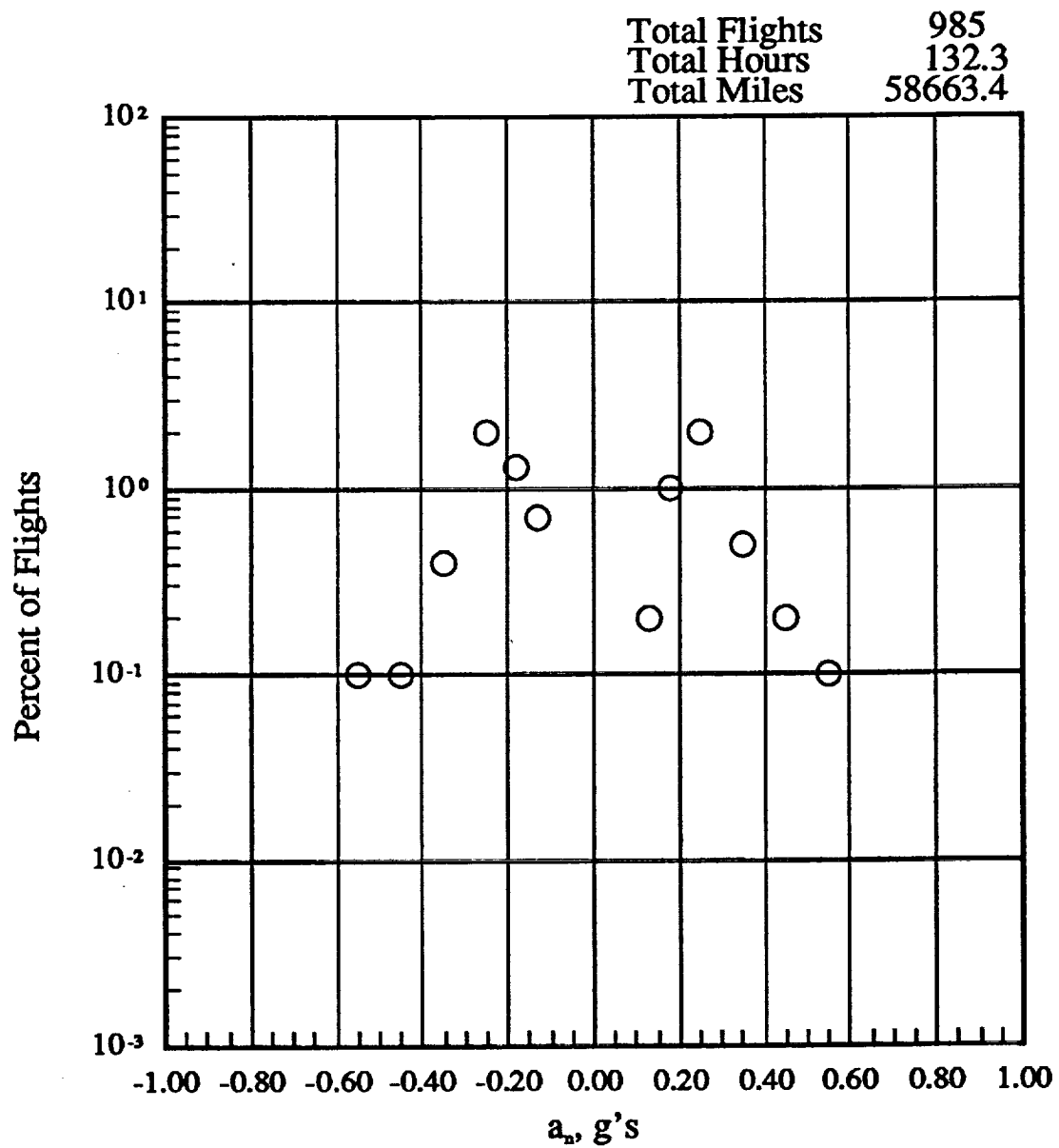
Figure 16.- Continued.



(f) 19500 to 24500 feet altitude

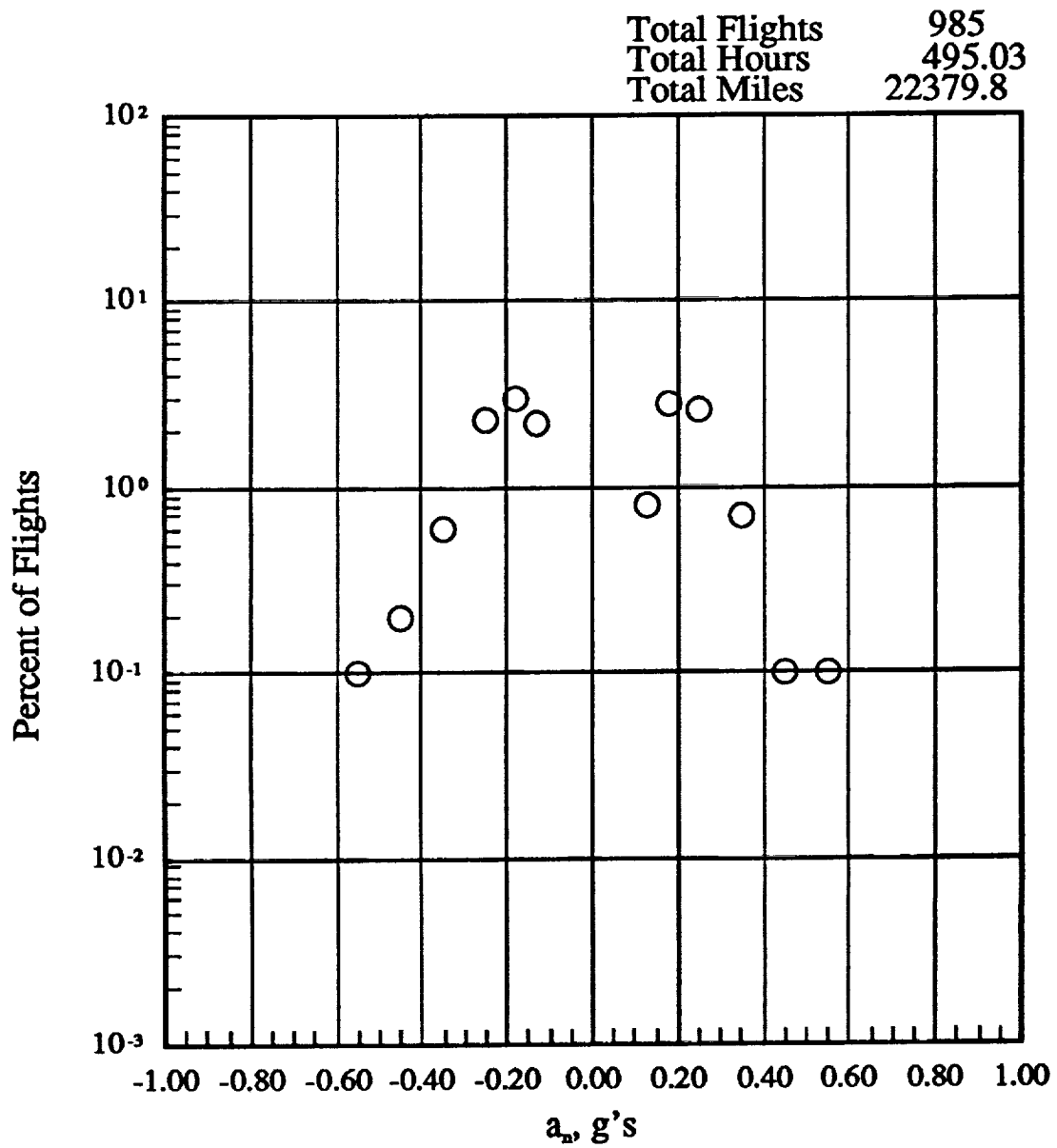
Figure 16.- Continued.





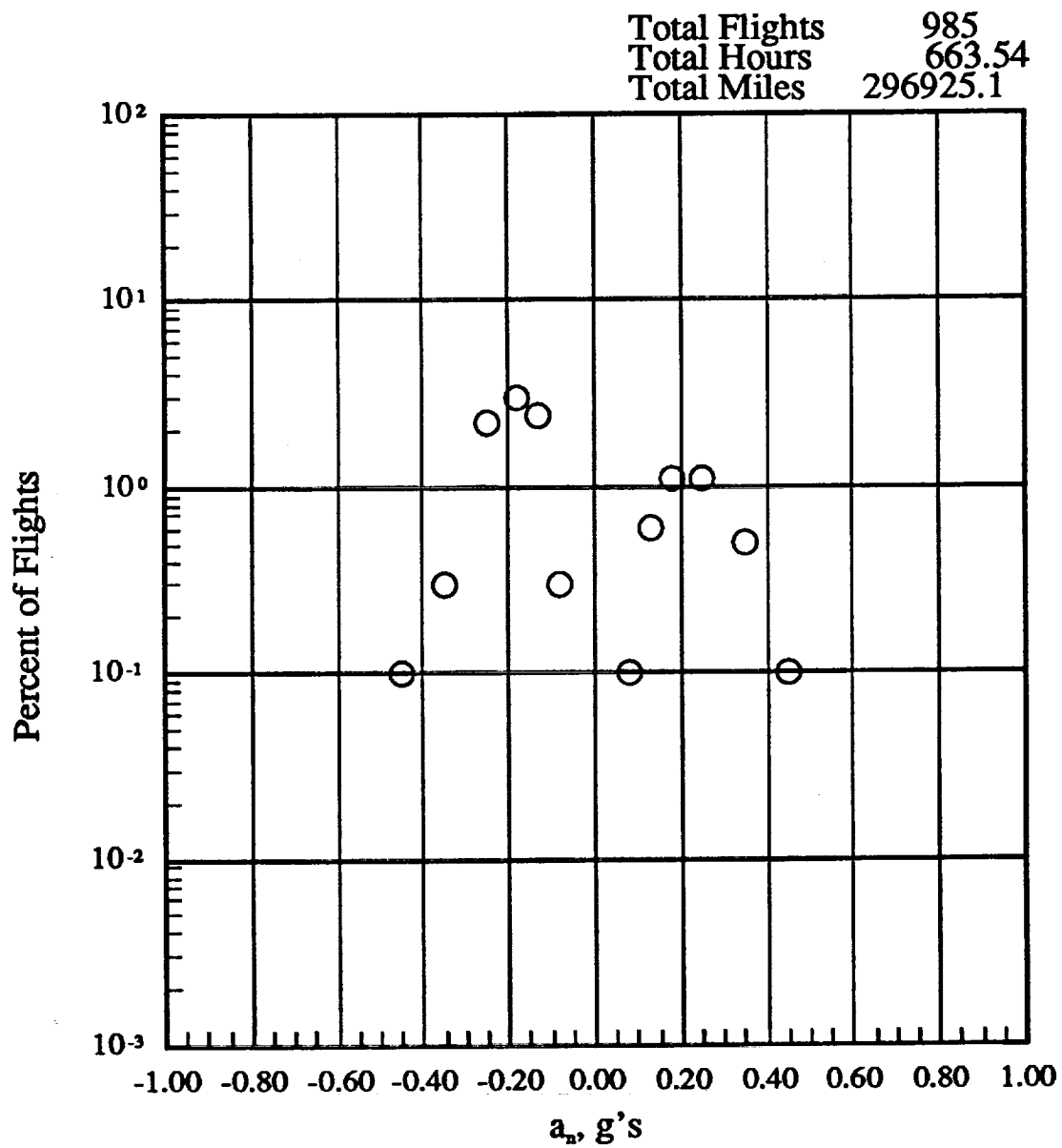
(g) 24500 to 29500 feet altitude

Figure 16.- Continued.



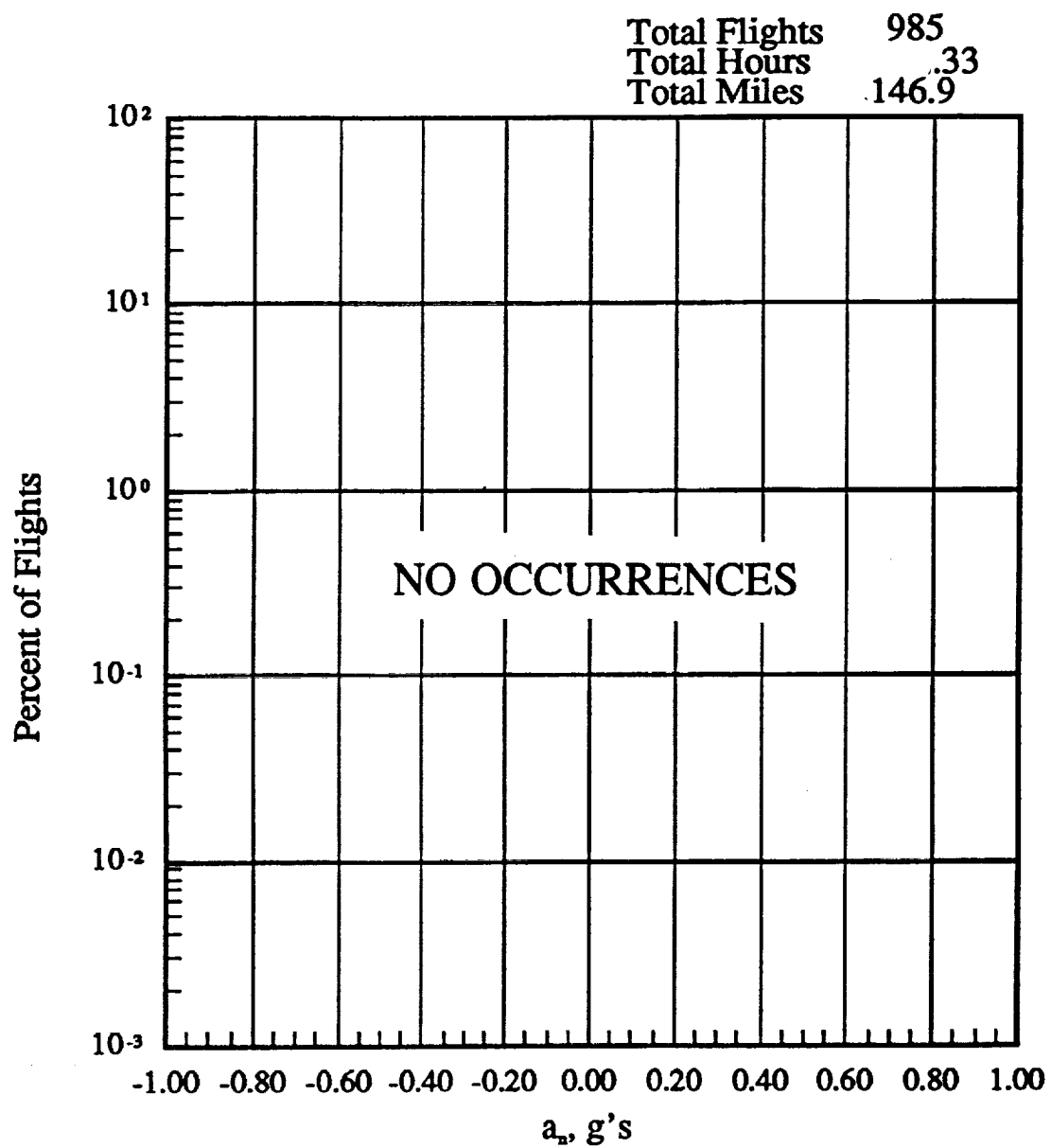
(h) 29500 to 34500 feet altitude

Figure 16.- Continued.



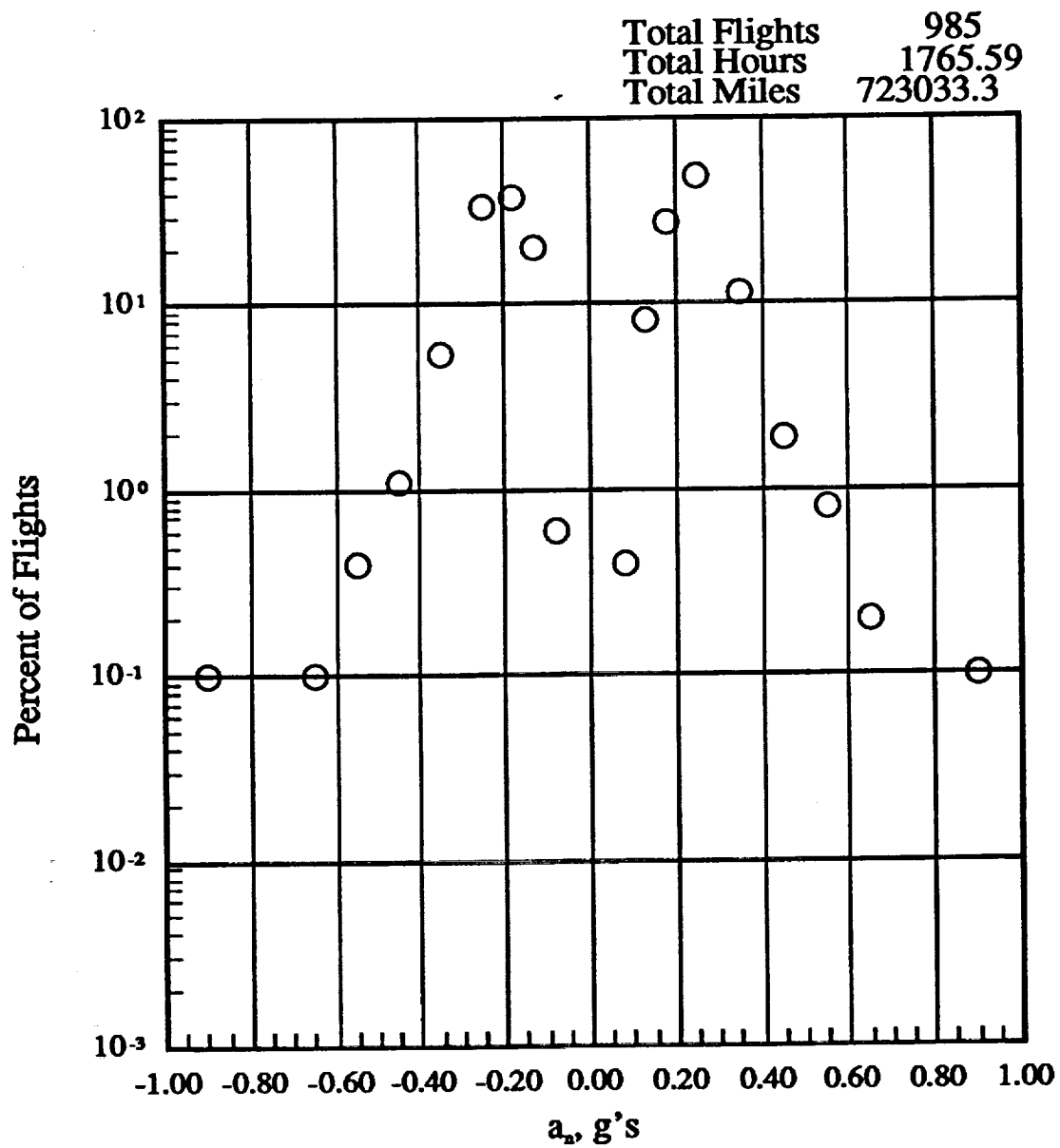
(i) 34500 to 39500 feet altitude

Figure 16.- Continued.



(j) 39500 to 44500 feet altitude

Figure 16.- Continued.



(k) -500 to 44500 feet altitude

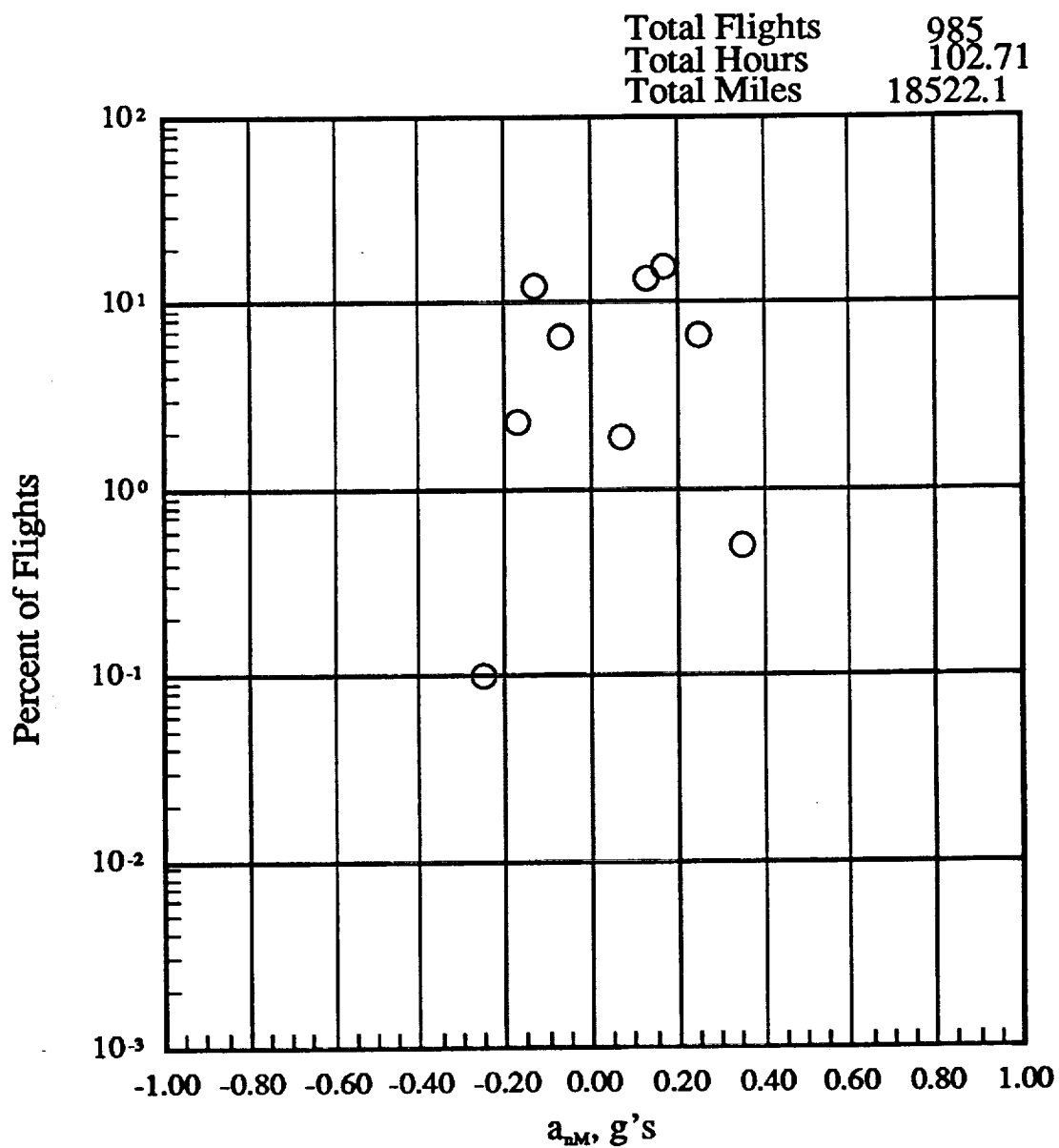
Figure 16.- Concluded.

PRESSURE ALTITUDE BANDS

FLIGHT HOURS @ ALT FLIGHT MILES @ ALT	-500 TO 4500 FT	4500 TO 9500 FT	9500 TO 14500 FT	14500 TO 19500 FT	19500 TO 24500 FT	24500 TO 29500 FT	29500 TO 34500 FT	34500 TO 39500 FT	39500 TO 44500 FT	-500 TO 44500 FT
<b>q's FROM</b>	<b>TO</b>									
1.60	1.80	0	0	0	0	0	0	0	0	0
1.40	1.60	0	0	0	0	0	0	0	0	0
1.20	1.40	0	0	0	0	0	0	0	0	0
1.00	1.20	0	0	0	0	0	0	0	0	0
.80	1.00	0	0	0	0	0	0	0	0	0
.70	0.80	0	0	0	0	0	0	0	0	0
.60	0.70	0	0	0	0	0	0	0	0	0
.50	0.60	0	0	0	0	0	0	0	0	0
.40	0.50	0	0	0	0	0	0	0	0	0
.30	0.40	0.50	0.40	0	0.10	0	0	0	0	1.30
.20	0.30	6.70	6.20	0.90	0.70	0.40	0.80	0.40	0	18.60
.15	0.20	15.70	9.00	5.50	1.40	1.40	1.60	0.30	0	36.40
.10	0.15	13.60	10.50	5.60	1.80	1.70	2.20	1.20	0	37.70
.05	0.10	1.90	1.30	1.50	0.10	0.40	0.30	0.30	0	6.00
-0.05	-0.10	6.60	3.40	3.40	0.60	0.80	2.70	3.60	0	21.80
-0.10	-0.15	12.40	10.40	13.20	2.10	2.50	7.80	9.20	0	61.80
-0.15	-0.20	2.30	3.60	2.40	0.70	1.30	0.90	2.10	0	14.10
-0.20	-0.30	0.10	0.50	0.10	0.10	0.30	0.20	0.30	0	1.90
-0.30	-0.40	0	0	0.10	0	0.10	0.10	0	0	0.30
-0.40	-0.50	0	0	0	0	0	0	0	0	0
-0.50	-0.60	0	0	0	0	0	0	0	0	0
-0.60	-0.70	0	0	0	0	0	0	0	0	0
-0.70	-0.80	0	0	0	0	0	0	0	0	0
-0.80	-1.00	0	0	0	0	0	0	0	0	0
-1.00	-1.20	0	0	0	0	0	0	0	0	0
-1.20	-1.40	0	0	0	0	0	0	0	0	0
-1.40	-1.60	0	0	0	0	0	0	0	0	0
-1.60	-1.80	0	0	0	0	0	0	0	0	0
<b>FLIGHT HOURS @ ALT</b>	<b>102.71</b>	<b>105.51</b>	<b>104.07</b>	<b>74.64</b>	<b>87.46</b>	<b>132.30</b>	<b>495.03</b>	<b>663.54</b>	<b>0.33</b>	<b>1765.59</b>
<b>FLIGHT MILES @ ALT</b>	<b>18522.12</b>	<b>26173.93</b>	<b>33995.36</b>	<b>28461.45</b>	<b>36365.13</b>	<b>58863.40</b>	<b>223579.81</b>	<b>296925.11</b>	<b>146.91</b>	<b>723033.21</b>
							<b>TOTAL FLIGHTS</b>			<b>985</b>

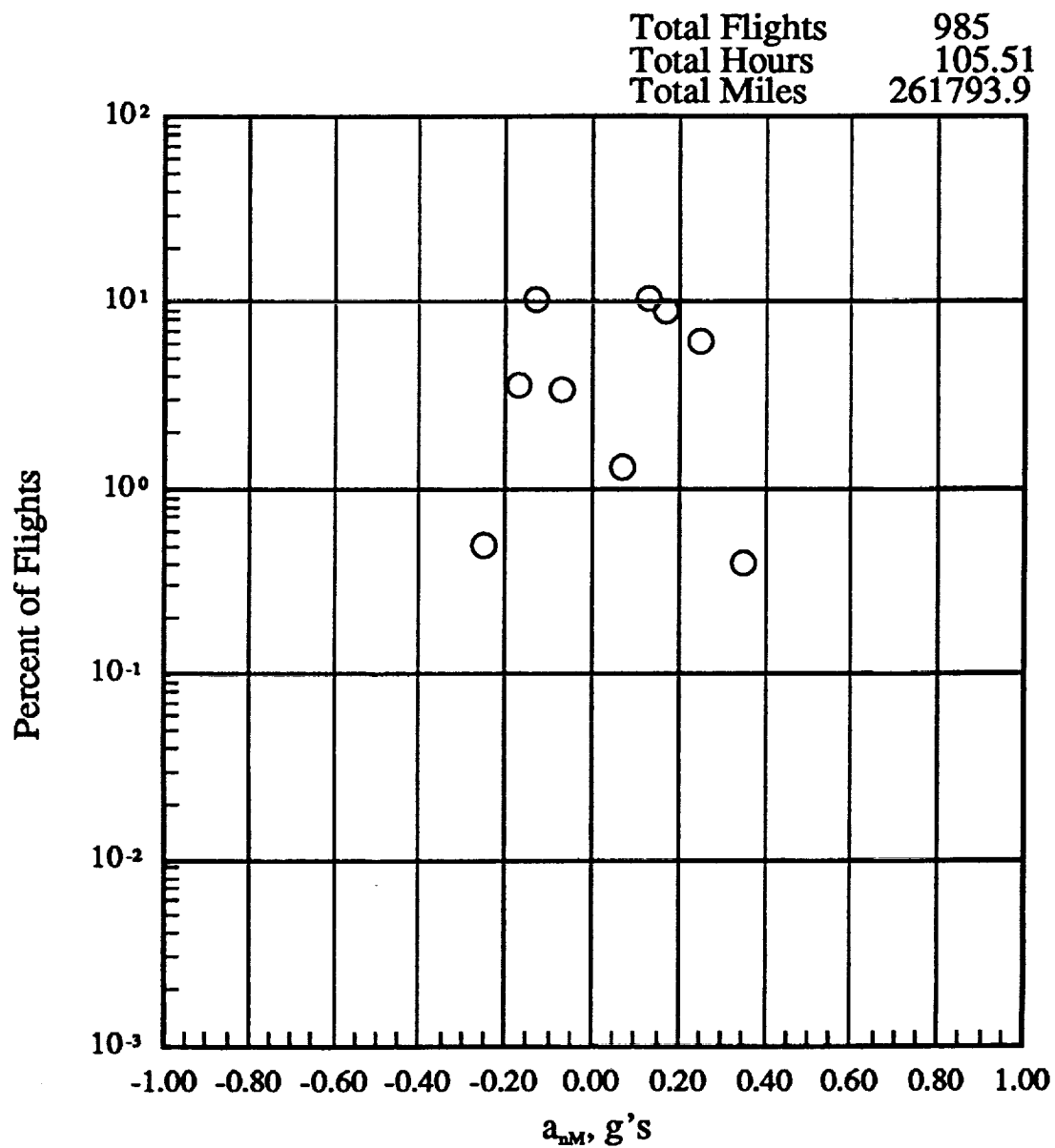
(a) Percent of flights where peak positive and negative  $a_{NM}$  per flight occurs within pressure altitude bands, any flap

Figure 17.- Peak positive and negative  $a_{NM}$  vs altitude.



(b) -500 to 4500 feet altitude

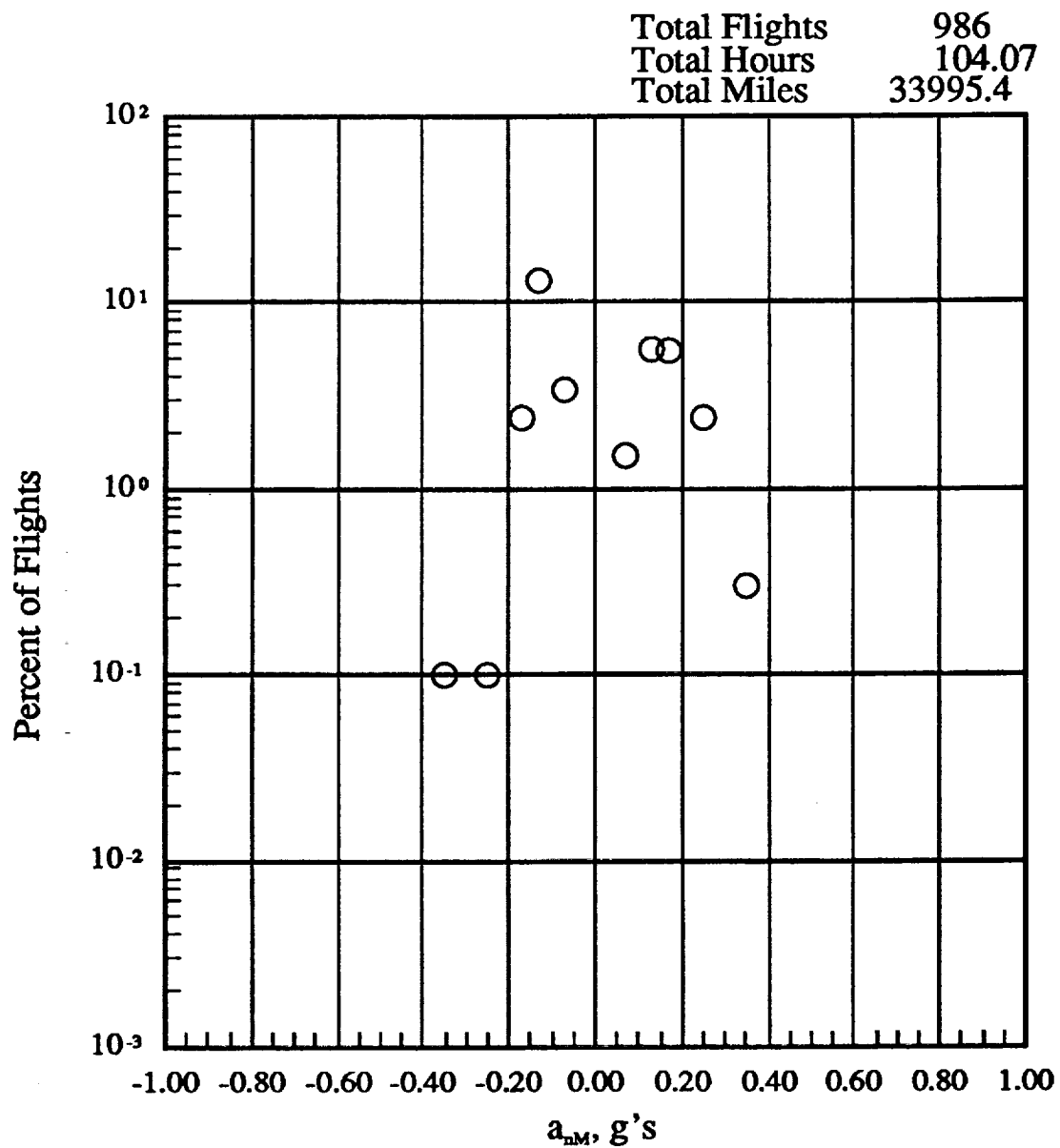
Figure 17.- Continued.



(c) 4500 to 9500 feet altitude

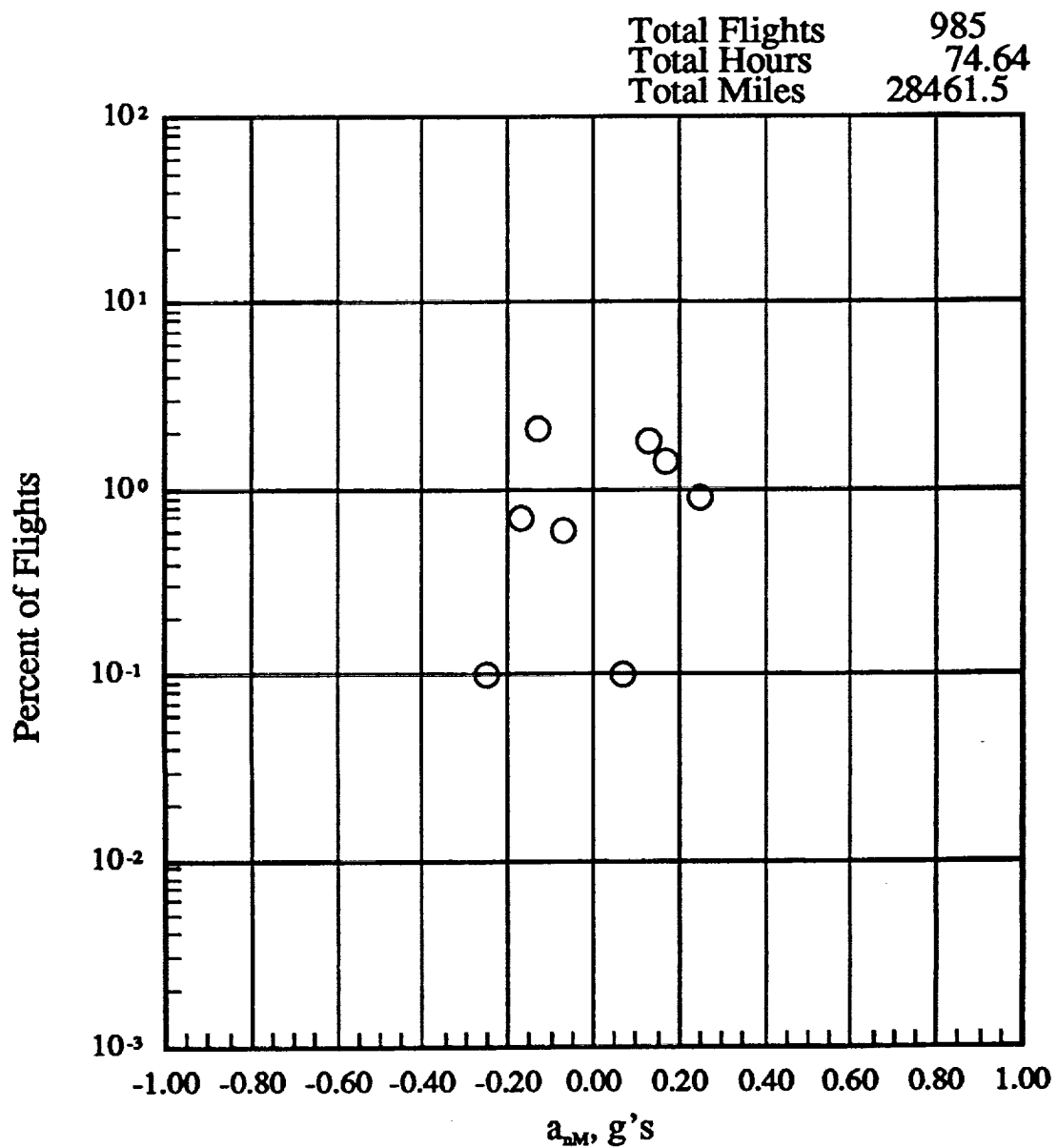
Figure 17.- Continued.





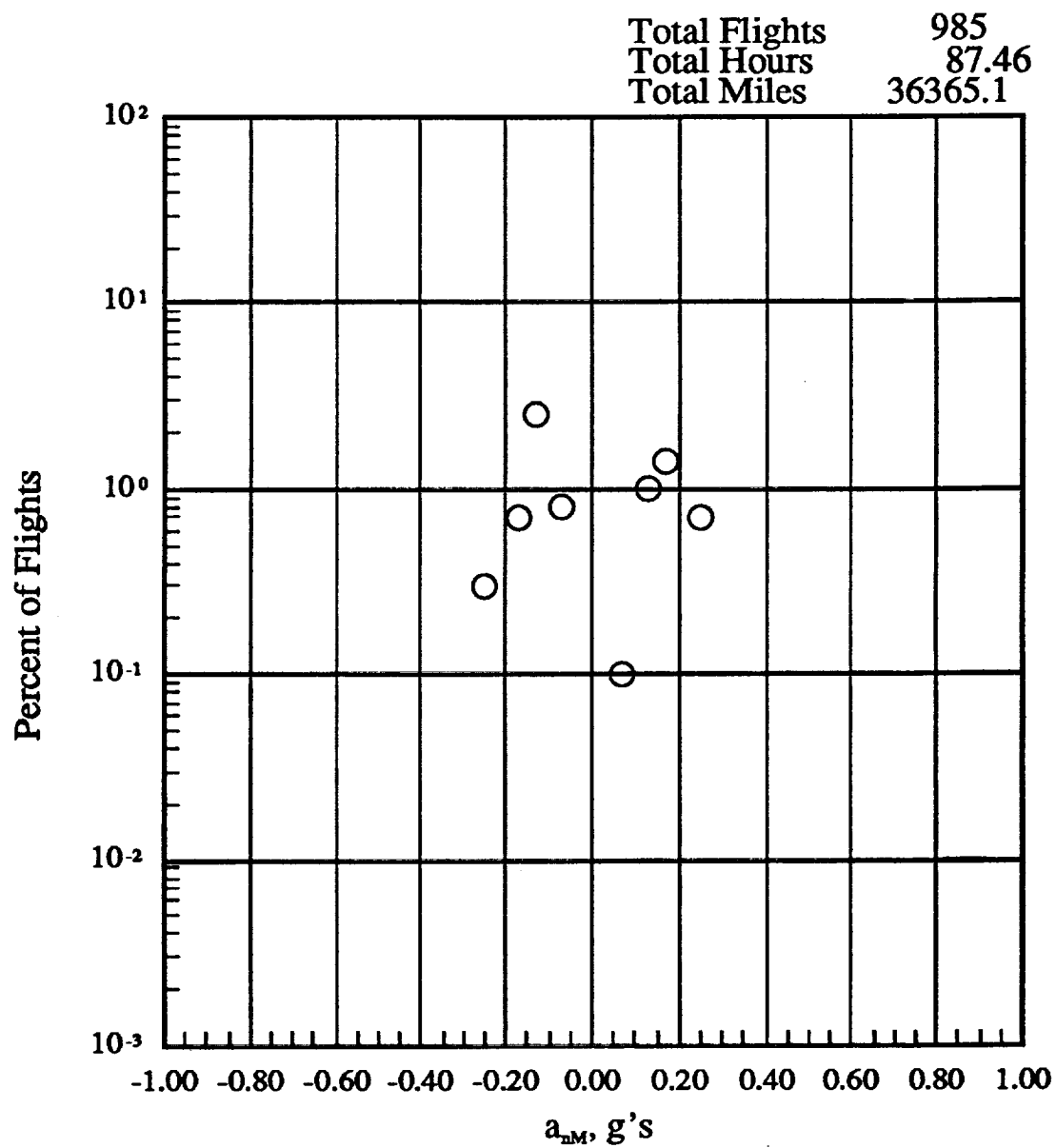
(d) 9500 to 14500 feet altitude

Figure 17.- Continued.



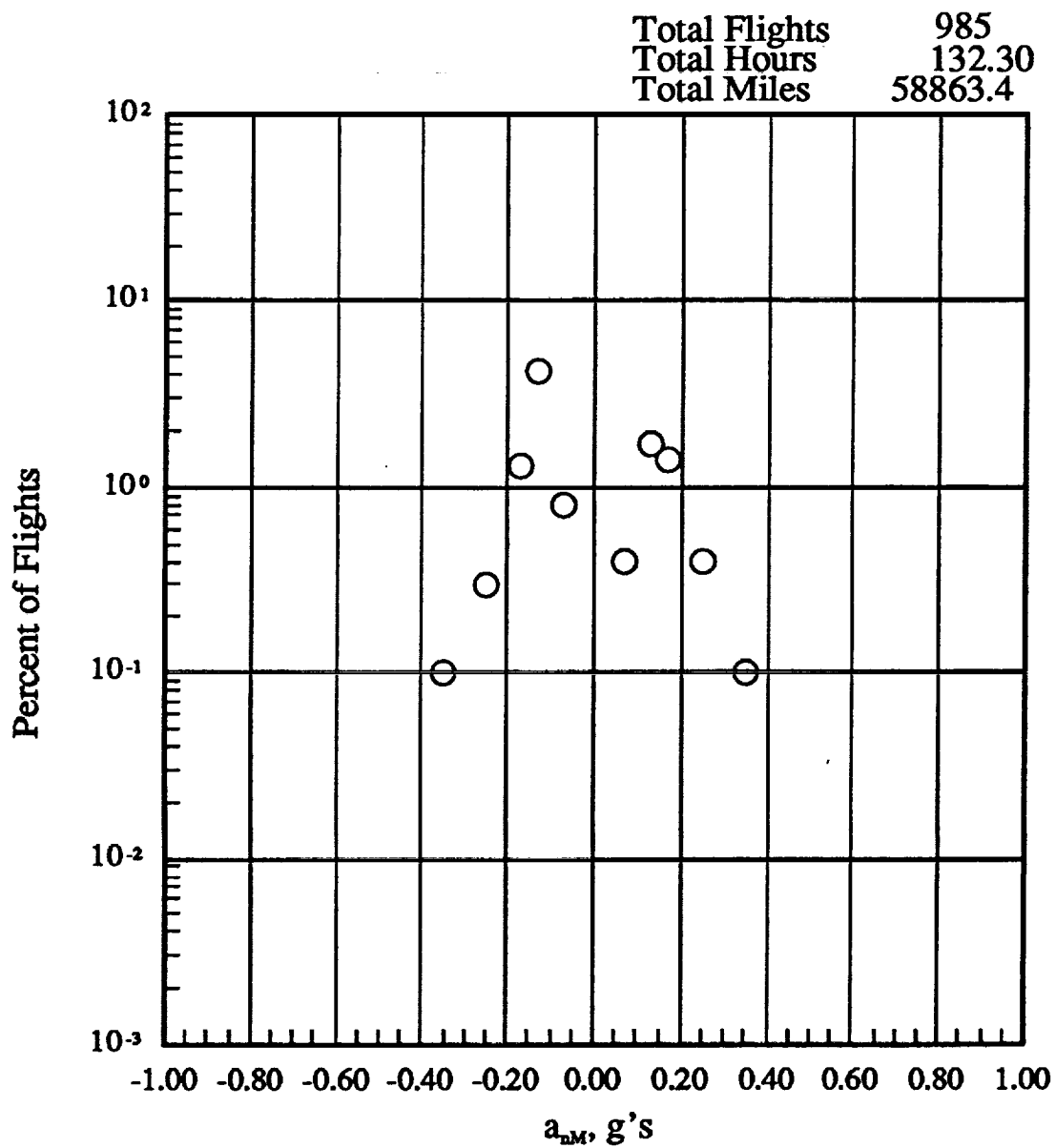
(e) 14500 to 19500 feet altitude

Figure 17.- Continued.



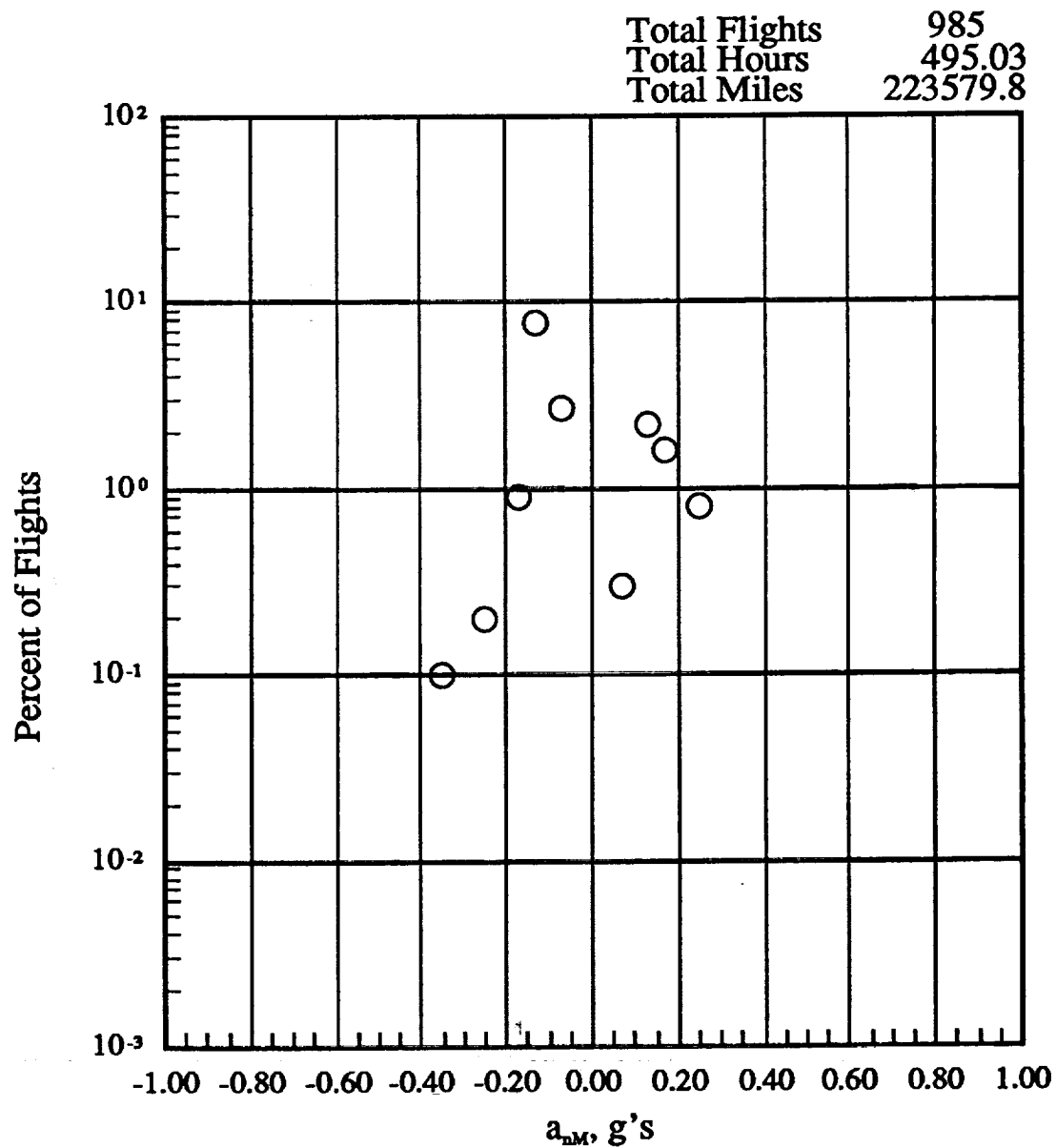
(f) 19500 to 24500 feet altitude

Figure 17.- Continued.



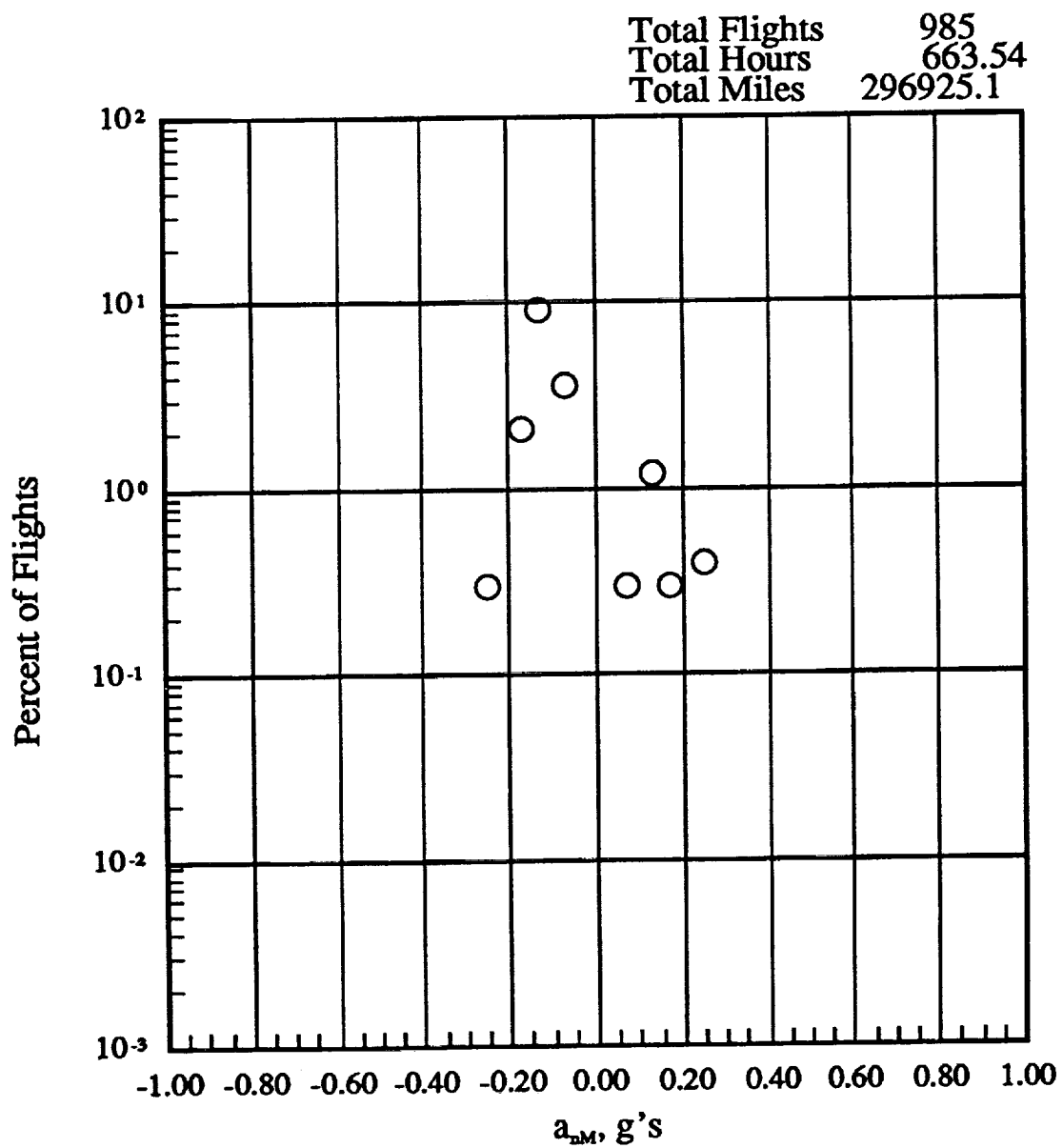
(g) 24500 to 29500 feet altitude

Figure 17.- Continued.



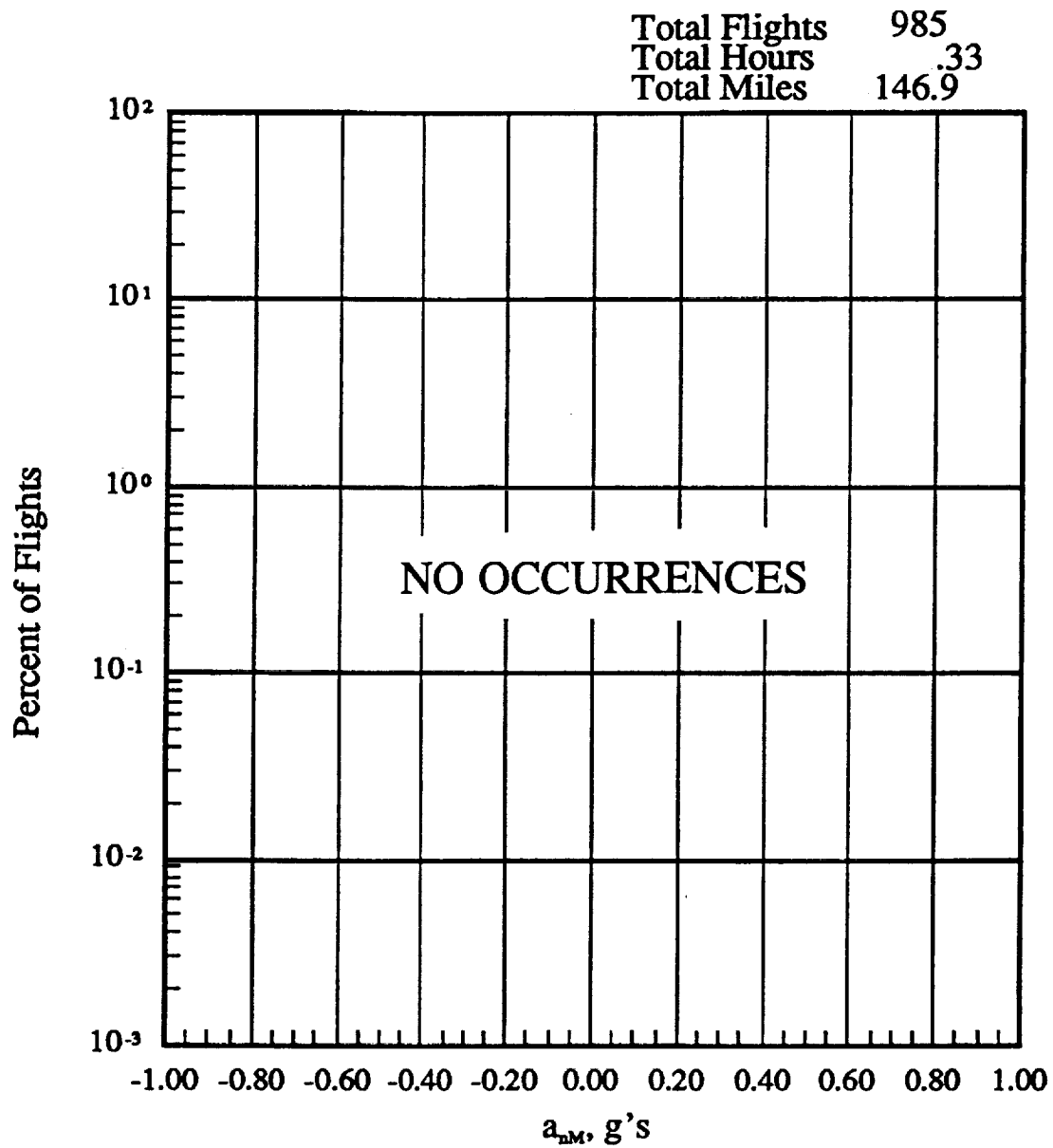
(h) 29500 to 34500 feet altitude

Figure 17.- Continued.



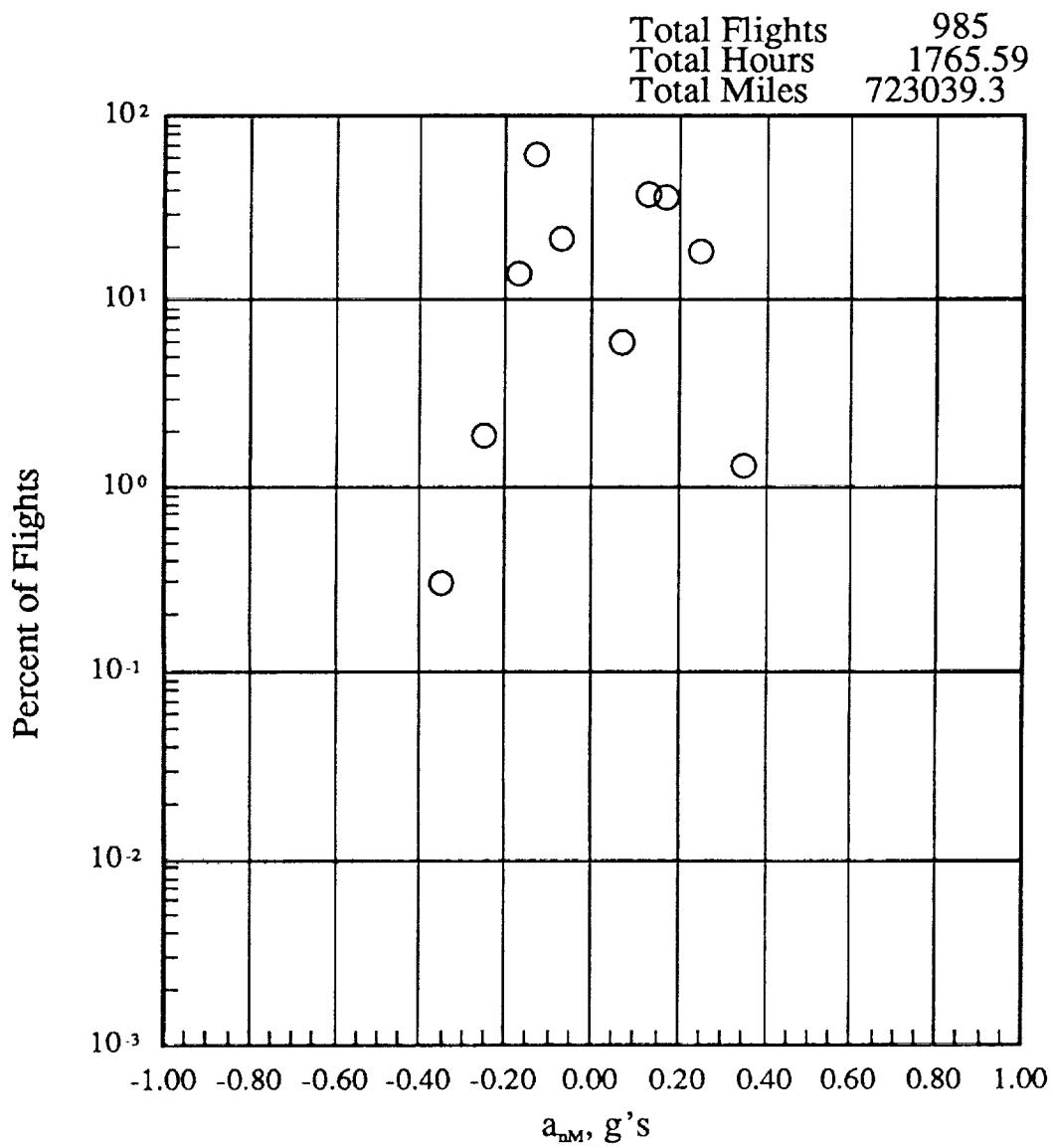
(i) 34500 to 39500 feet altitude

Figure 17.- Continued.



(j) 39500 to 44500 feet altitude

Figure 17.- Continued.



(k) -500 to 44500 feet altitude

Figure 17.- Concluded.



PRESSURE ALTITUDE BANDS

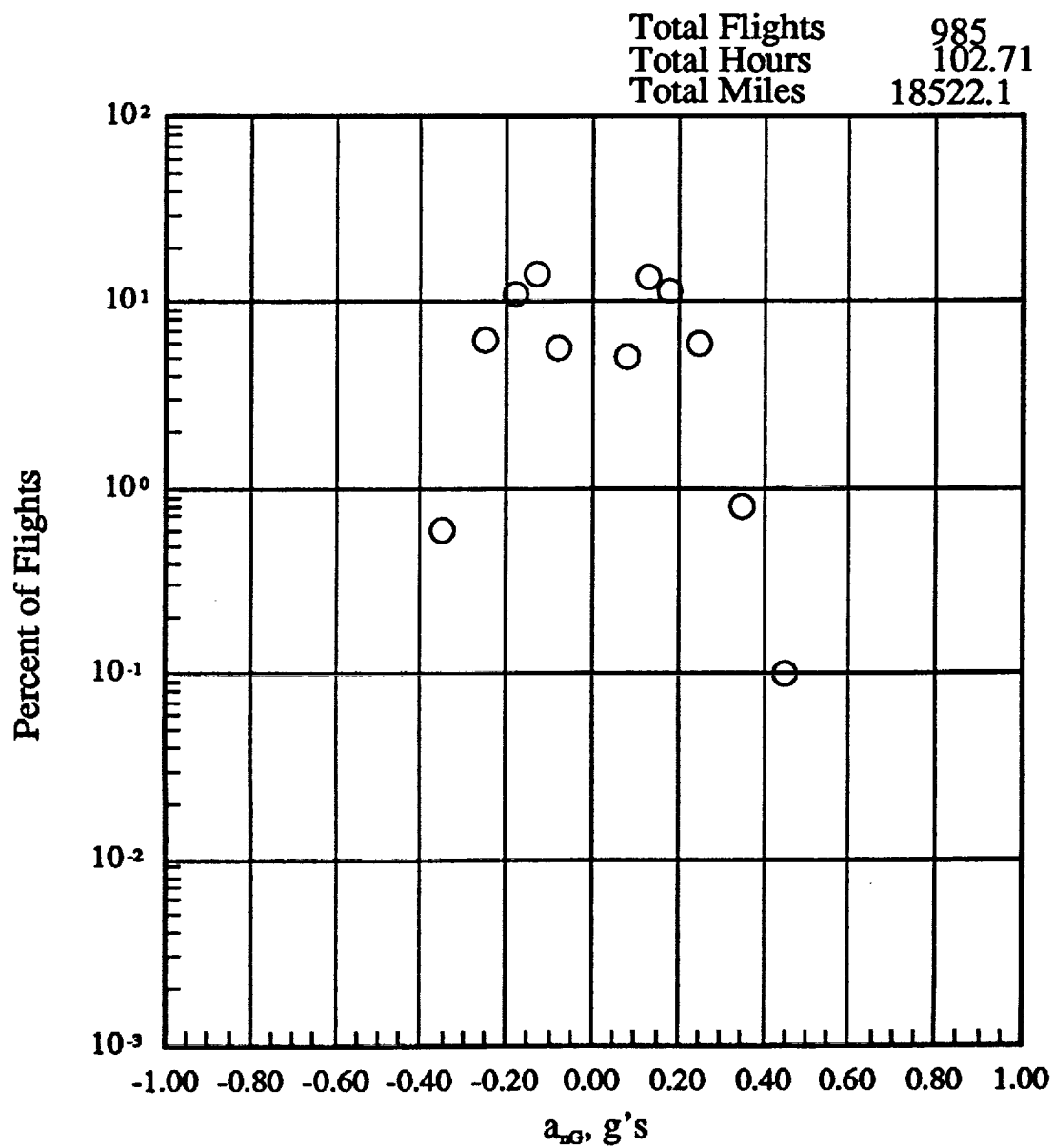
LEVEL FOR EACH FLIGHT																					
a <sub>TC</sub> max		-500 TO		4500 TO		9500 TO		14500 TO		19500 TO		24500 TO		29500 TO		34500 TO		39500 TO		-500 TO	
FLIGHT		4500 FT		9500 FT		14500 FT		19500 FT		24500 FT		29500 FT		34500 FT		39500 FT		44500 FT		44500 FT	
G'S FROM TO																					
1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	1.00	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0	0	0	0.10	0	0
.70	.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	.60	0	0	0	0	0	0	0.10	0	0.10	0	0.10	0	0	0	0	0	0	0.20	0	0
.40	.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0	0.10	0.10	0	0	0	0	0	0.60	0	0
.30	.40	0.80	0.50	0.70	0.70	0.70	0	0.20	0.20	0.30	0.30	0.30	0.30	0.10	0	0.10	0	0	2.80	0	0
.20	.30	6.00	4.70	3.90	3.90	3.90	1.70	1.30	1.40	1.40	1.10	1.10	1.40	1.10	1.10	1.10	0	0	18.80	0	0
.15	.20	11.50	4.80	3.50	2.70	2.70	1.20	1.20	0.50	0.50	0.50	0.50	2.50	1.20	1.20	1.20	0	0	28.00	0	0
.10	.15	13.70	5.80	5.10	1.00	1.00	2.00	1.60	1.60	1.60	1.60	1.60	2.80	2.80	2.40	2.40	0	0	34.50	0	0
.05	.10	5.10	2.30	1.70	0.80	0.80	0.80	0.80	0.30	0.30	0.30	0.30	1.60	1.60	1.30	1.30	0	0	14.40	0	0
-.05	-.10	5.70	2.80	1.80	0.80	0.80	0.80	0.80	0.50	0.50	0.50	0.50	1.40	1.40	1.90	1.90	0	0	16.00	0	0
-.10	-.15	14.30	5.50	4.40	2.10	2.10	2.10	2.10	1.60	1.60	1.40	1.40	2.30	2.30	1.30	1.30	0	0	33.00	0	0
-.15	-.20	11.10	4.70	3.60	1.70	1.70	1.70	1.70	1.60	1.60	0.70	0.70	2.30	2.30	1.40	1.40	0	0	27.10	0	0
-.20	-.30	6.30	3.90	2.70	1.20	1.20	1.20	1.20	0.50	0.50	0.50	0.50	1.30	1.30	1.50	1.50	0	0	18.90	0	0
-.30	-.40	0.60	1.00	0.70	0.30	0.30	0.30	0.30	0.30	0.30	0.20	0.20	0.30	0.30	0.20	0.20	0	0	3.70	0	0
-.40	-.50	0	0	0	0.10	0.10	0.10	0.10	0.10	0.10	0	0	0	0	0	0	0	0	0.20	0	0
-.50	-.60	0	0	0	0	0	0	0	0.10	0.10	0.10	0.10	0.10	0	0	0	0	0	0.40	0	0
-.60	-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0	0
-.70	-.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	-1.00	0	0	0	0	0	0	0	0.10	0.10	0	0	0	0	0	0	0	0	0.10	0	0
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0.10	0	0	0	0	0	0	0.10	0	0
-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT		102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59	0.33	1765.59
FLIGHT MILES @ ALT		18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21	146.91	723033.21

985

TOTAL FLIGHTS

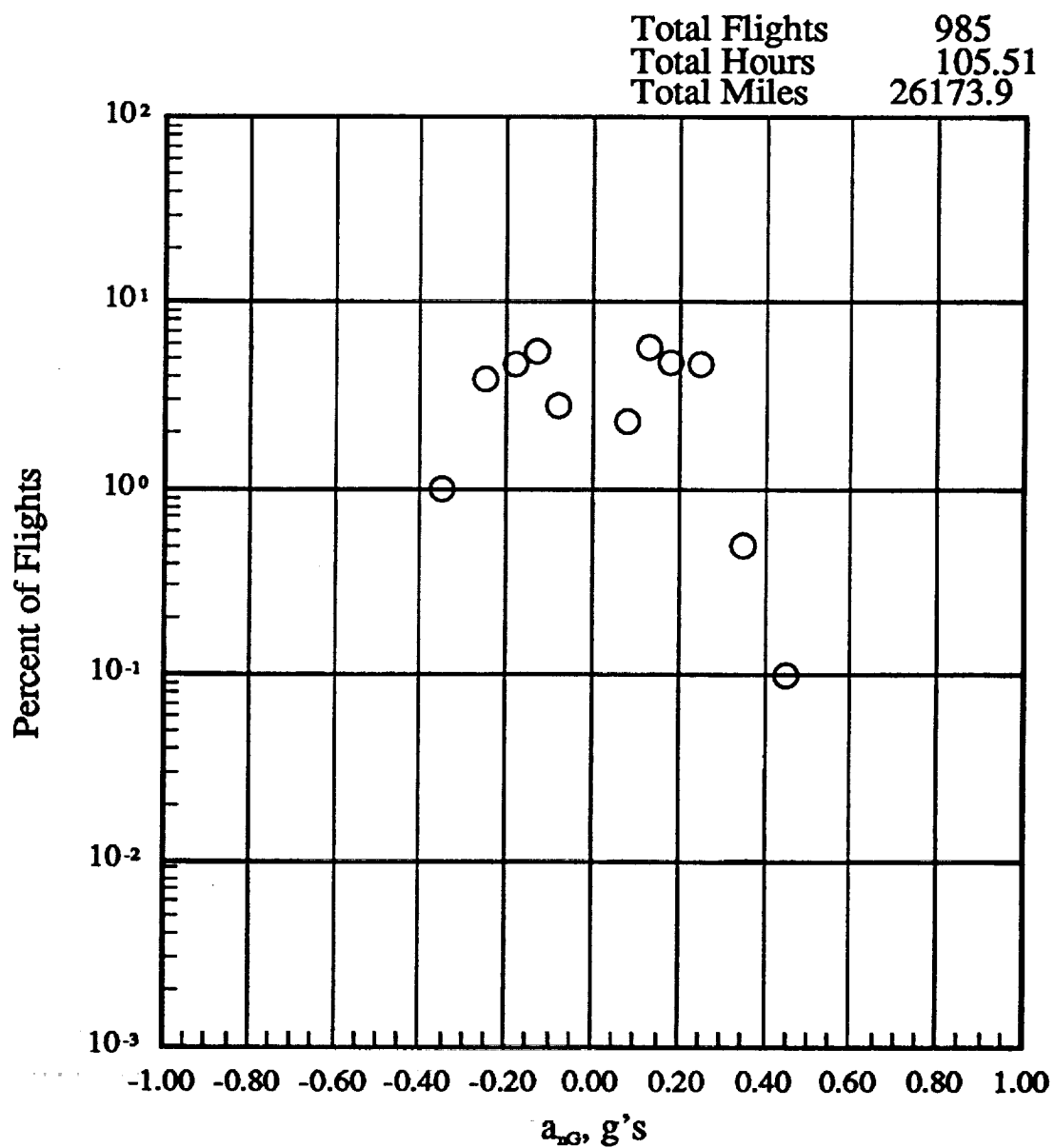
(a) Percent of flights where peak positive and negative a<sub>TC</sub> per flight occurs within pressure altitude bands, any flap

Figure 18.- Peak positive and negative a<sub>TC</sub> vs altitude.



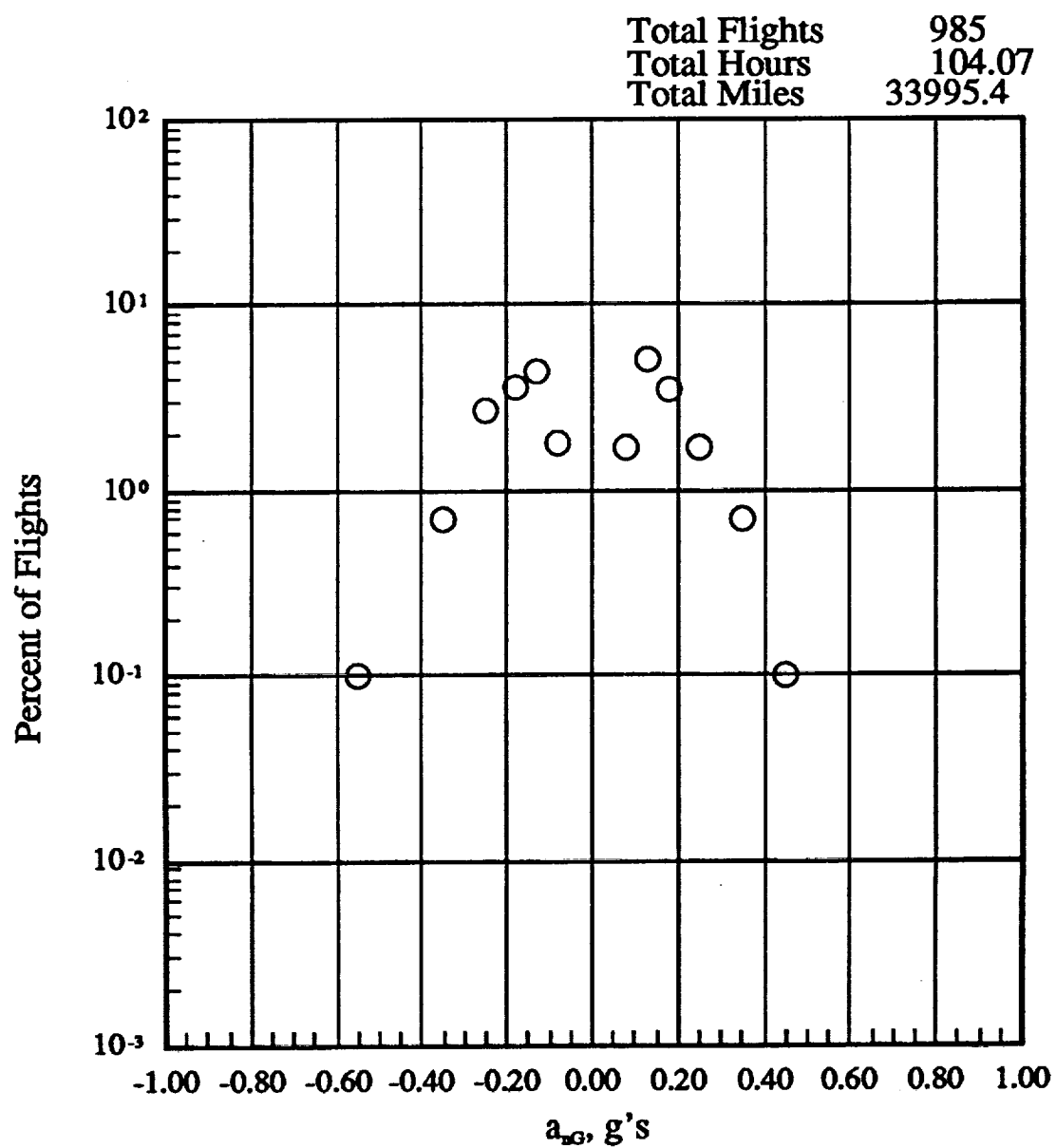
(b) -500 to 4500 feet altitude

Figure 18.- Continued.



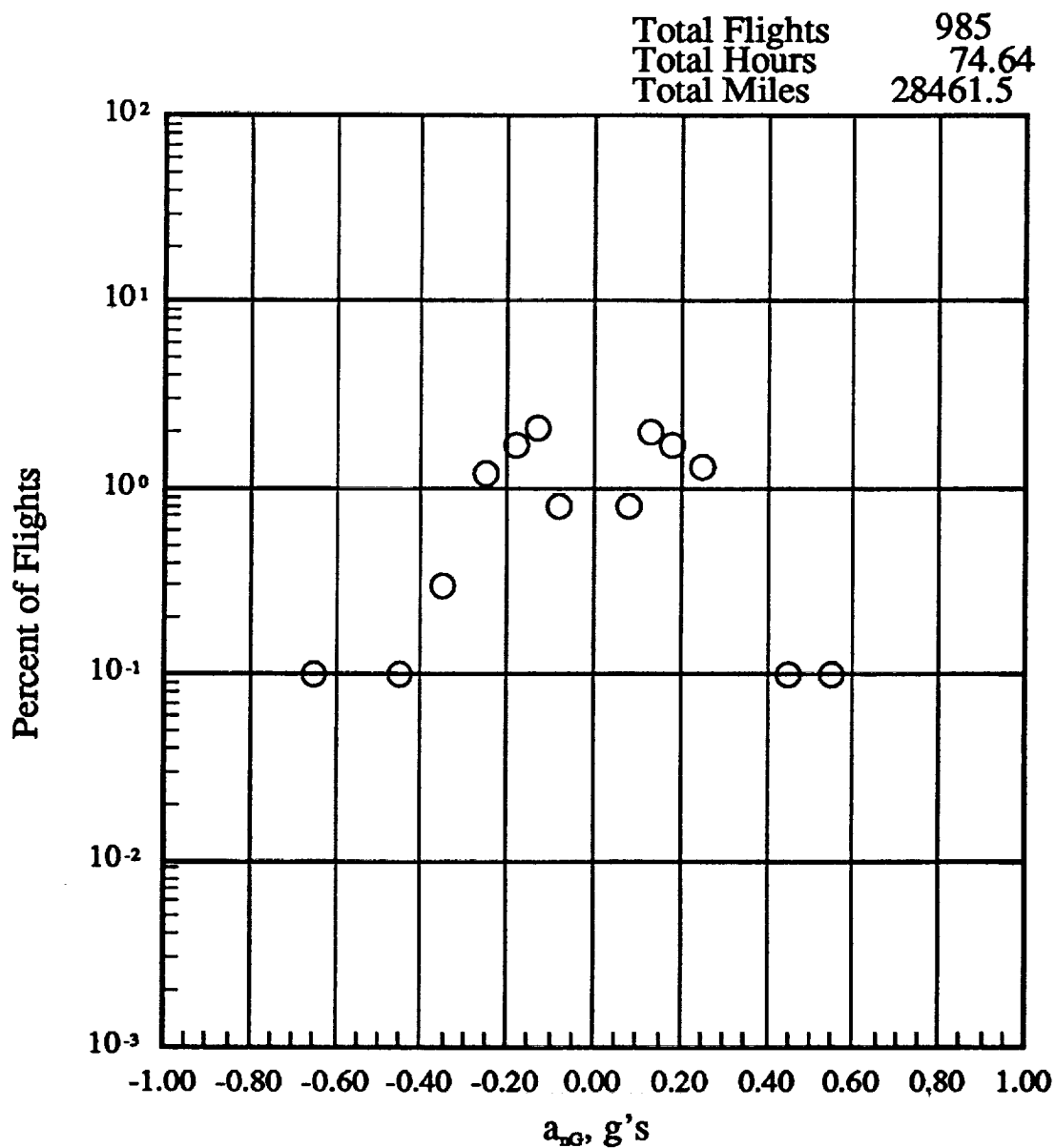
(c) 4500 to 9500 feet altitude

Figure 18.- Continued.



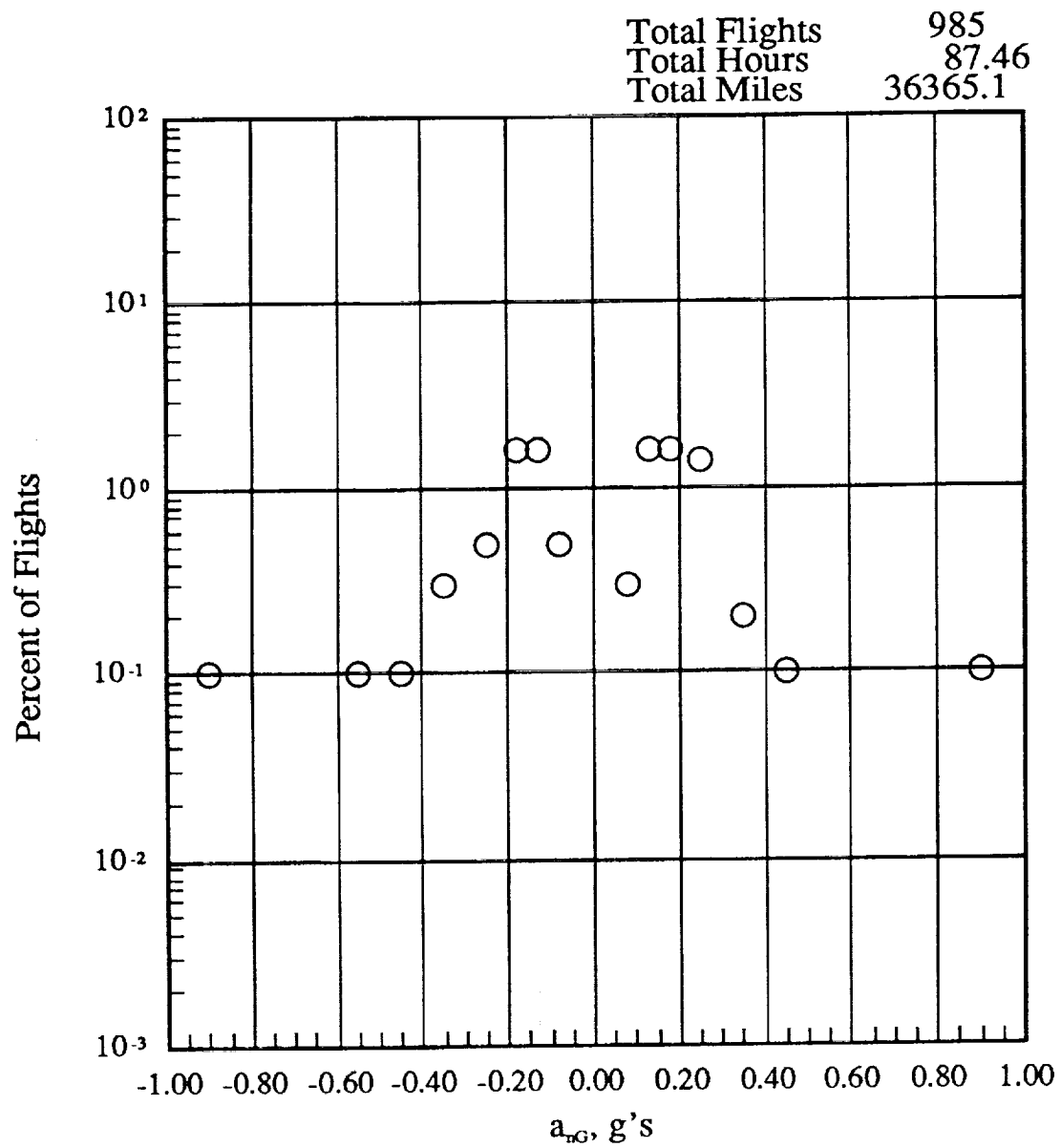
(d) 9500 to 14500 feet altitude

Figure 18.- Continued.



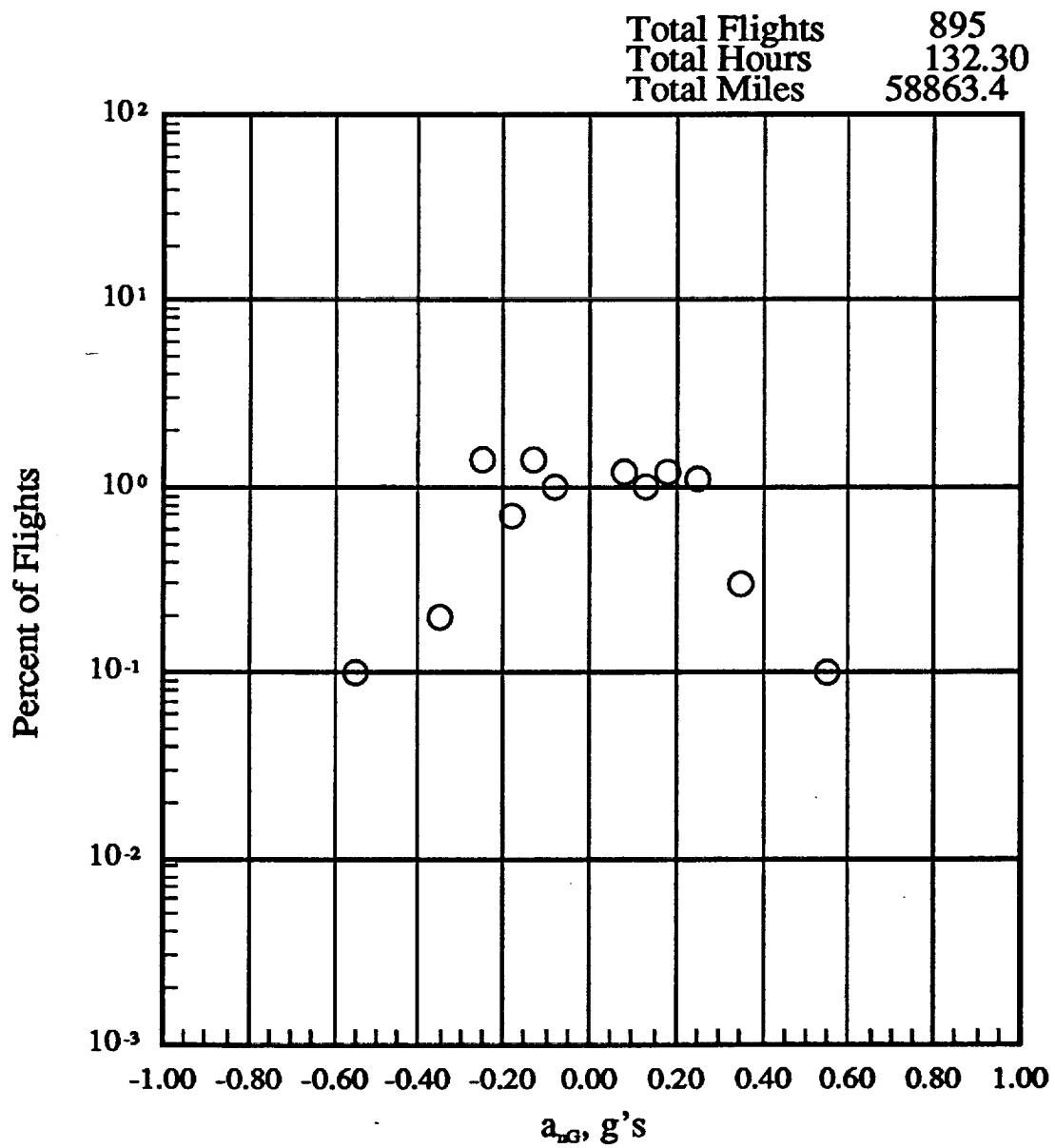
(e) 14500 to 19500 feet altitude

Figure 18.- Continued.



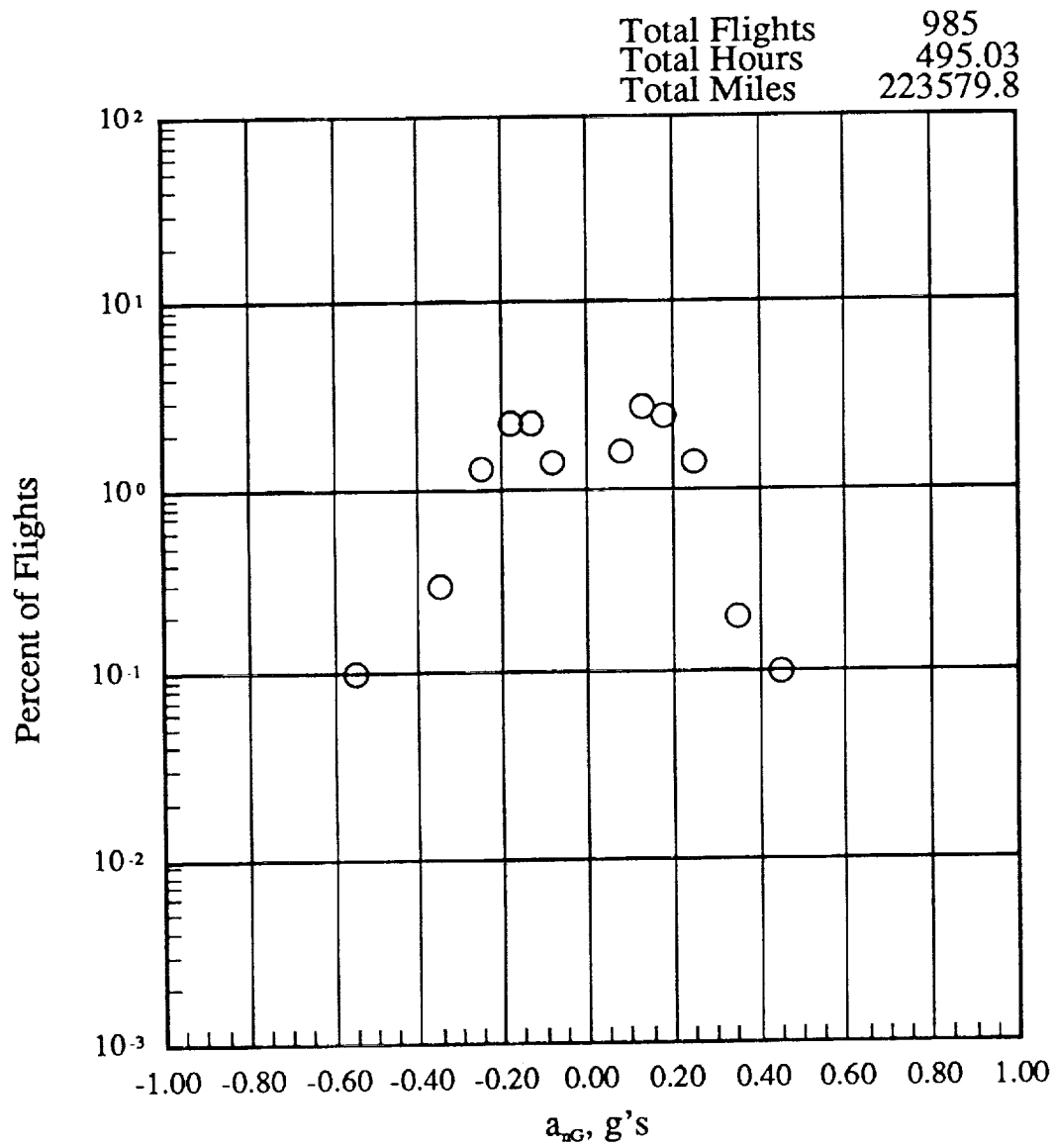
(f) 19500 to 24500 feet altitude

Figure 18.- Continued.



(g) 24500 to 29500 feet altitude

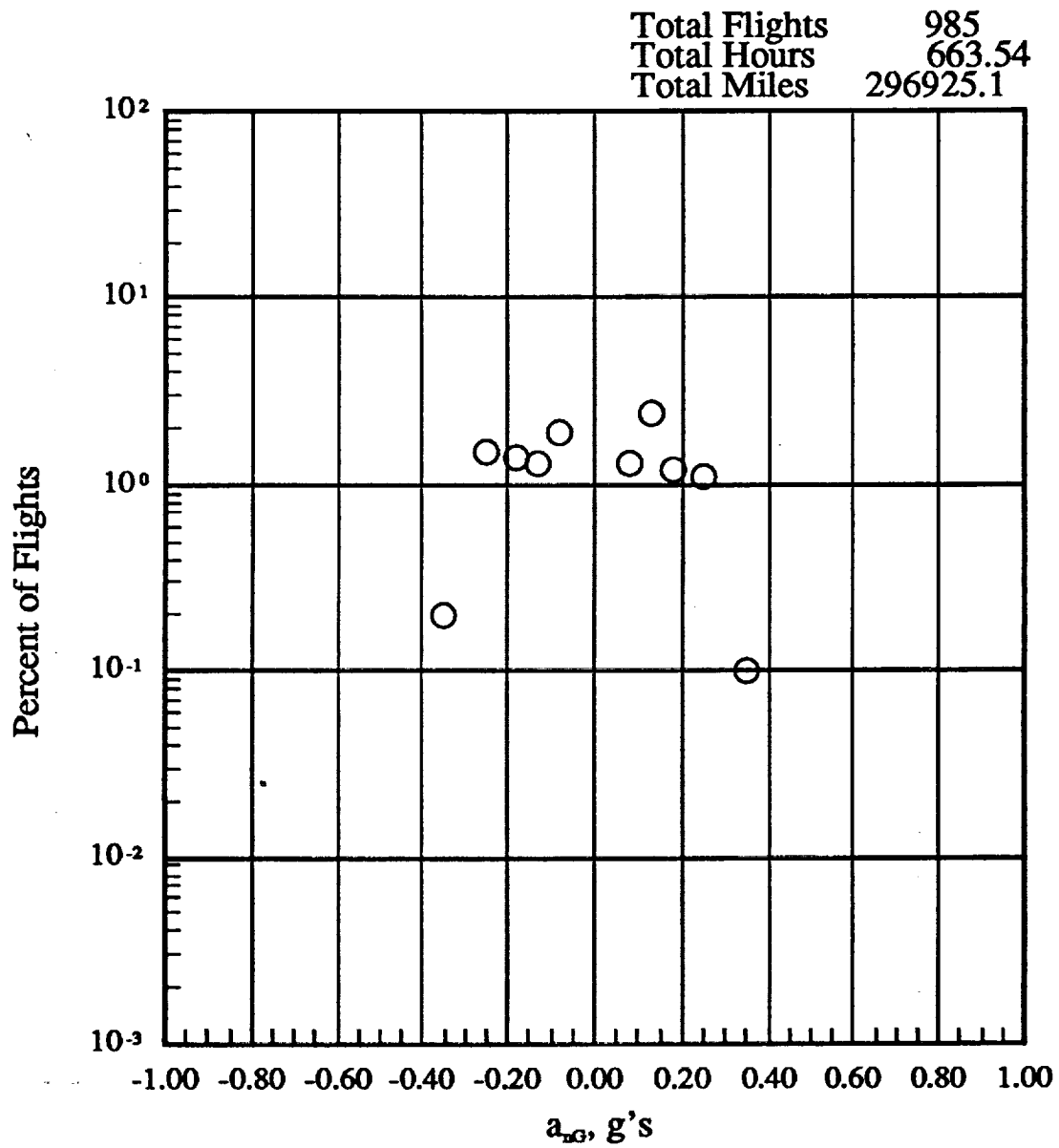
Figure 18.- Continued.



(h) 29500 to 34500 feet altitude

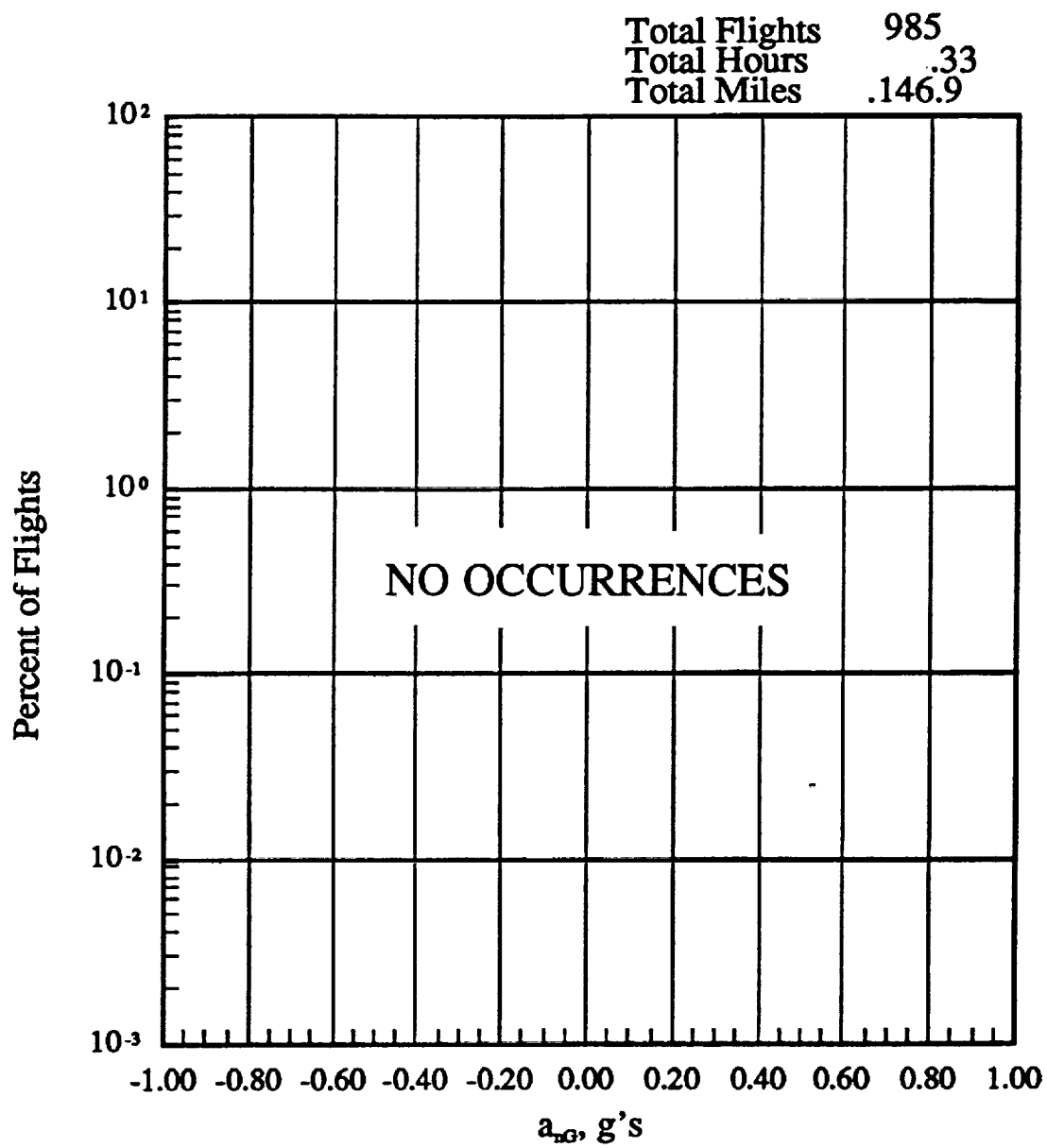
Figure 18.- Continued.





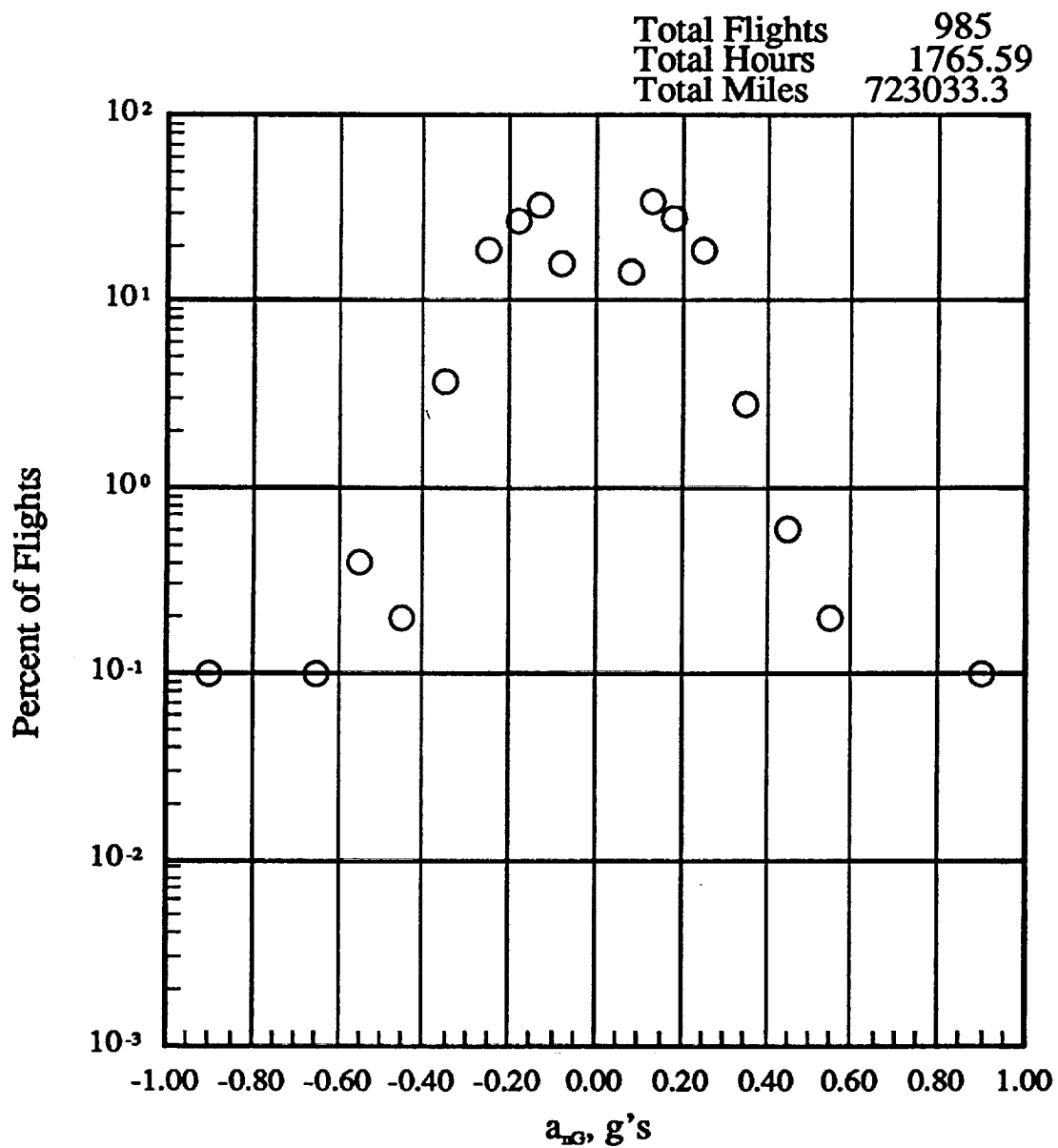
(i) 34500 to 39500 feet altitude

Figure 18.- Continued.



(j) 39500 to 44500 feet altitude

Figure 18.- Continued.



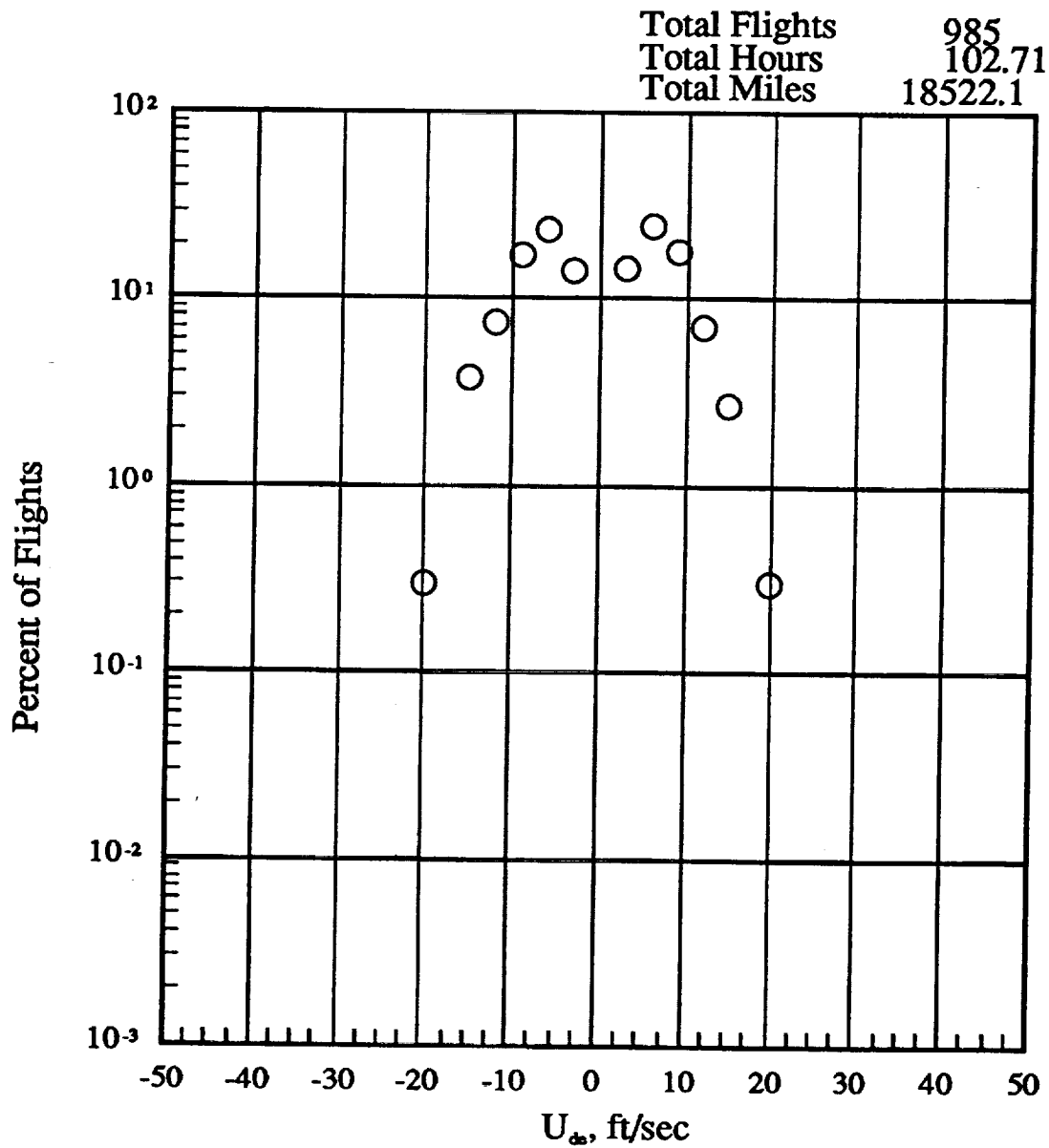
(k) -500 to 44500 feet altitude

Figure 18.- Concluded.

MAXIMUM $U_{DE}$		-500 TO	4500 TO	9500 TO	14500 TO	19500 TO	24500 TO	29500 TO	34500 TO	39500 TO	-500 TO
LEVEL FOR EACH		4500 FT	9500 FT	14500 FT	19500 FT	24500 FT	29500 FT	34500 FT	39500 FT	44500 FT	44500 FT
FLIGHT	FT/SEC										
100	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0.10	0	0	0	0	0.10
20	0.30	0	0.10	0	0	0	0	0	0	0	0.40
15	2.70	0.60	0.60	0.30	0.20	0.10	0.10	0.10	0	0	4.20
12	7.10	1.60	0.50	0	0	0.10	0.10	0.10	0.10	0	9.60
9	18.10	4.20	1.10	0.20	0.20	0.30	0.60	0.30	0	0	25.10
6	24.80	5.30	2.60	0.80	0.80	0.80	0.50	1.20	0.60	0	36.60
3	14.70	3.10	1.90	0.80	0.80	0.50	0.10	1.30	0.70	0	23.20
-3	14.30	4.40	1.80	0.70	0.70	0.60	0.20	0.90	0.40	0	23.40
-6	23.70	4.40	2.20	1.00	0.40	0.40	0.90	1.00	0.90	0	34.50
-9	17.30	4.00	0.80	0.30	0.50	0.50	0.50	0.30	0.60	0	24.30
-12	7.50	1.90	0.50	0.20	0	0	0.10	0	0	0	10.30
-15	3.80	0.70	0.20	0.10	0.20	0.20	0.10	0.20	0	0	5.30
-20	0.30	0.10	0.10	0.10	0.20	0.20	0	0	0	0	0.80
-30	0	0	0	0	0	0	0	0	0	0	0
-40	0	0	0	0	0	0	0.10	0	0	0	0.10
-50	0	0	0	0	0	0	0	0	0	0	0
-60	0	0	0	0	0	0	0	0	0	0	0
-70	0	0	0	0	0	0	0	0	0	0	0
-80	0	0	0	0	0	0	0	0	0	0	0
-90	0	0	0	0	0	0	0	0	0	0	0
-100	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	102.71	105.51	104.07	74.64	87.46	132.30	495.03	663.54	0.33	1765.59	
FLIGHT MILES @ ALT	18522.12	26173.93	33995.36	28461.45	36365.13	58863.40	223579.81	296925.11	146.91	723033.21	
TOTAL FLIGHTS											985

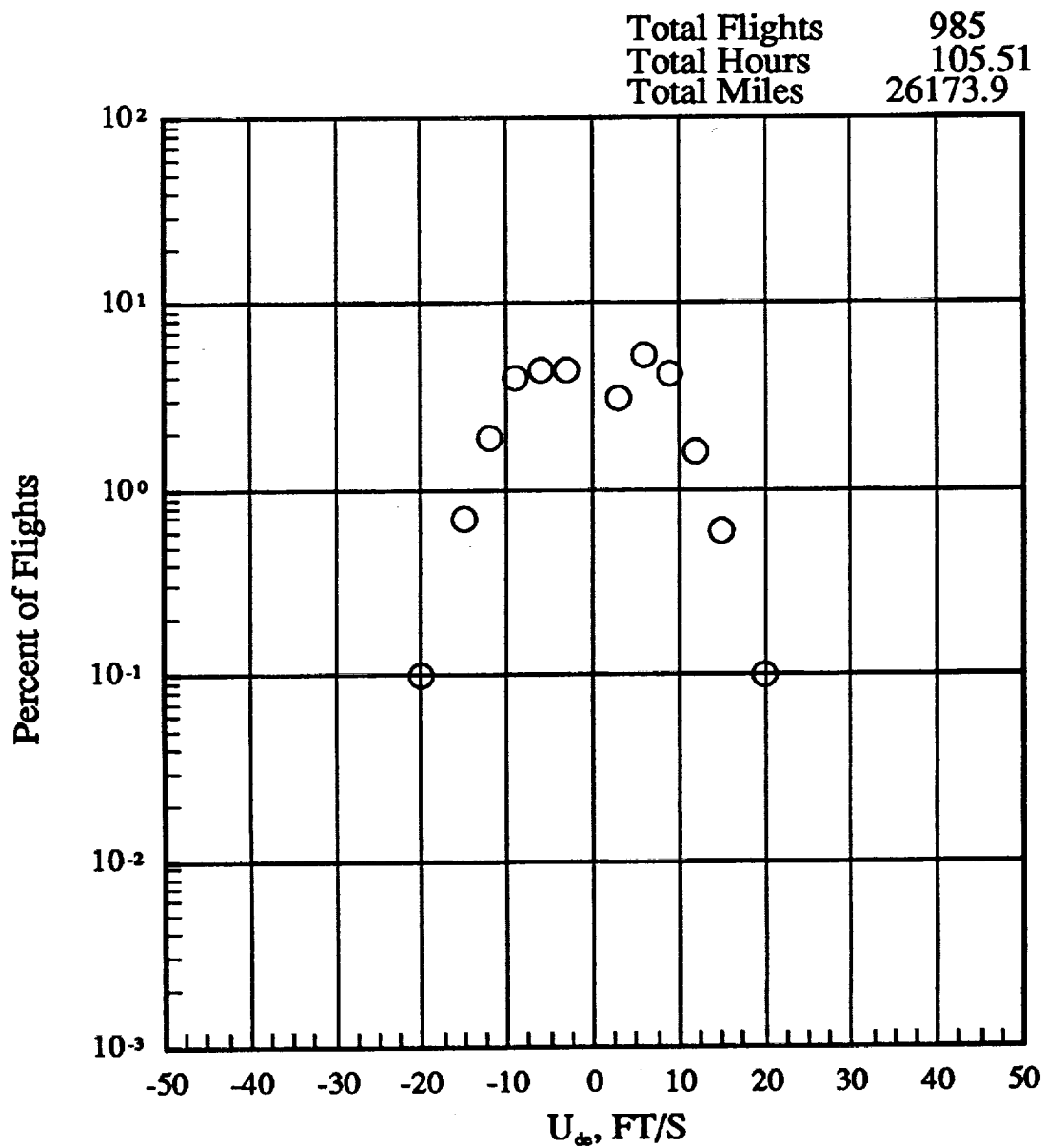
(a) Percent of flights where peak positive and negative  $U_{de}$  per flight occurs within pressure altitude bands, any flap

Figure 19.- Peak positive and negative  $U_{de}$  vs altitude.



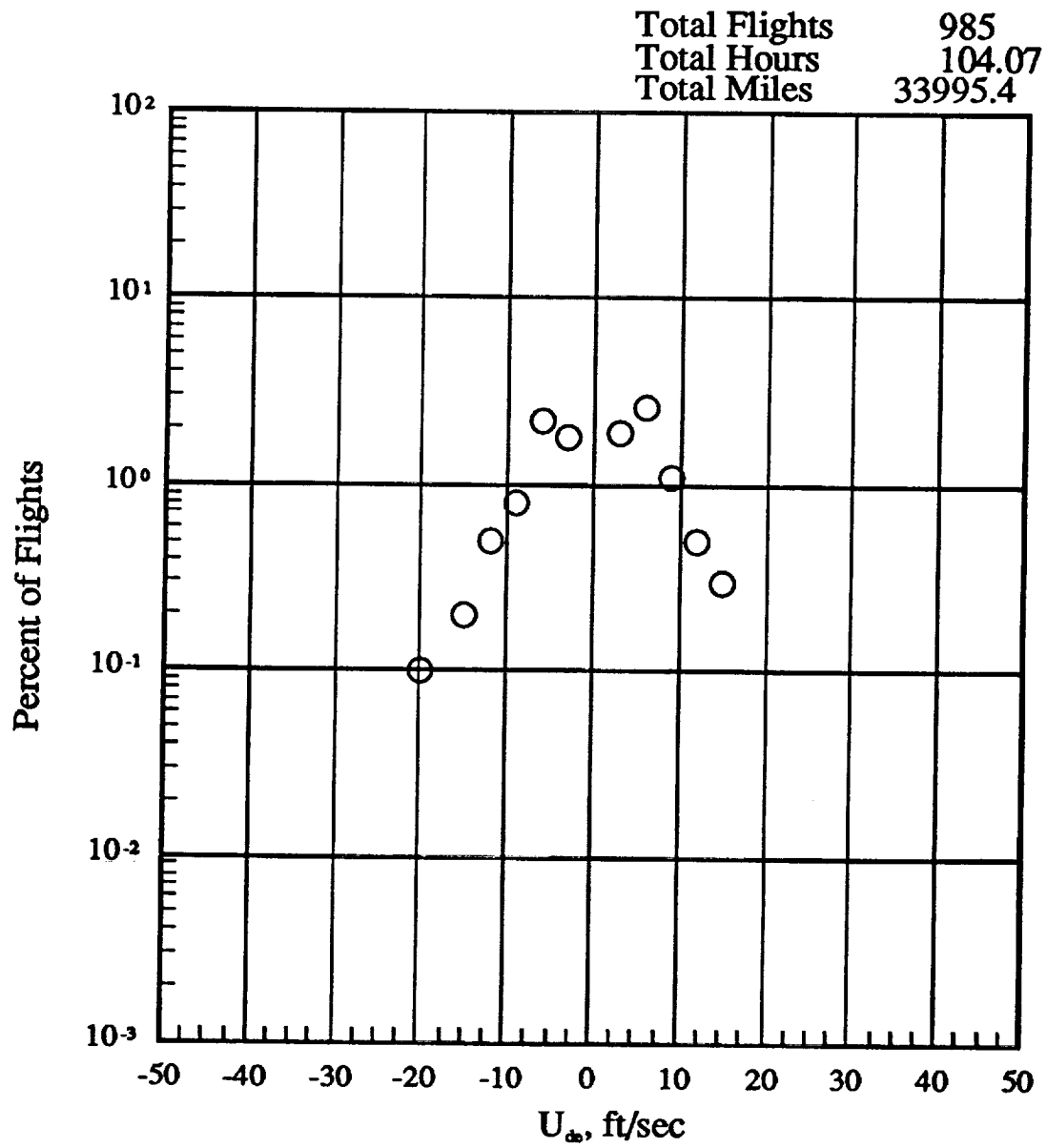
(b) -500 to 4500 feet altitude

Figure 19.- Continued.



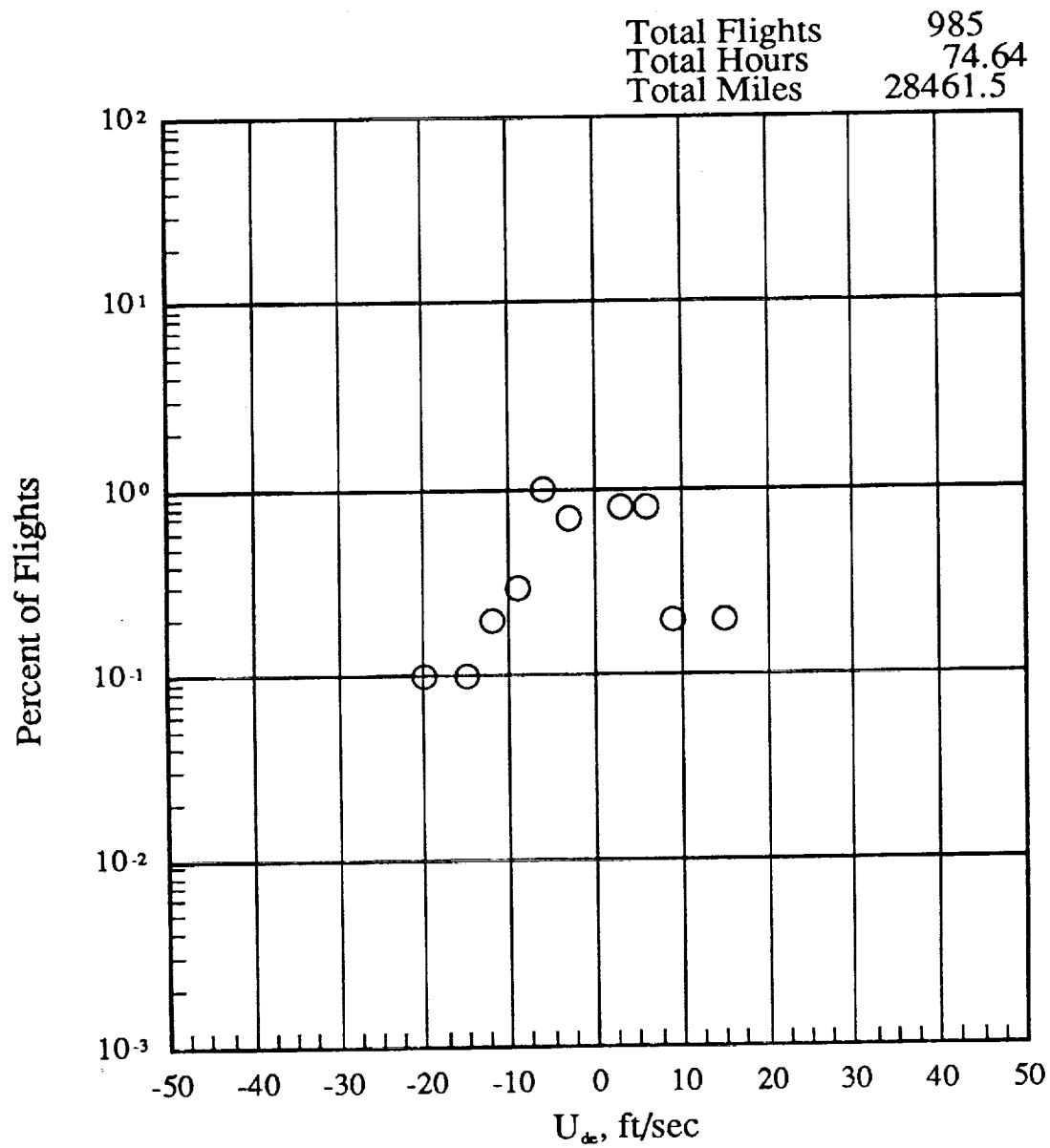
(c) 4500 to 9500 feet altitude

Figure 19.- Continued.



(d) 9500 to 14500 feet altitude

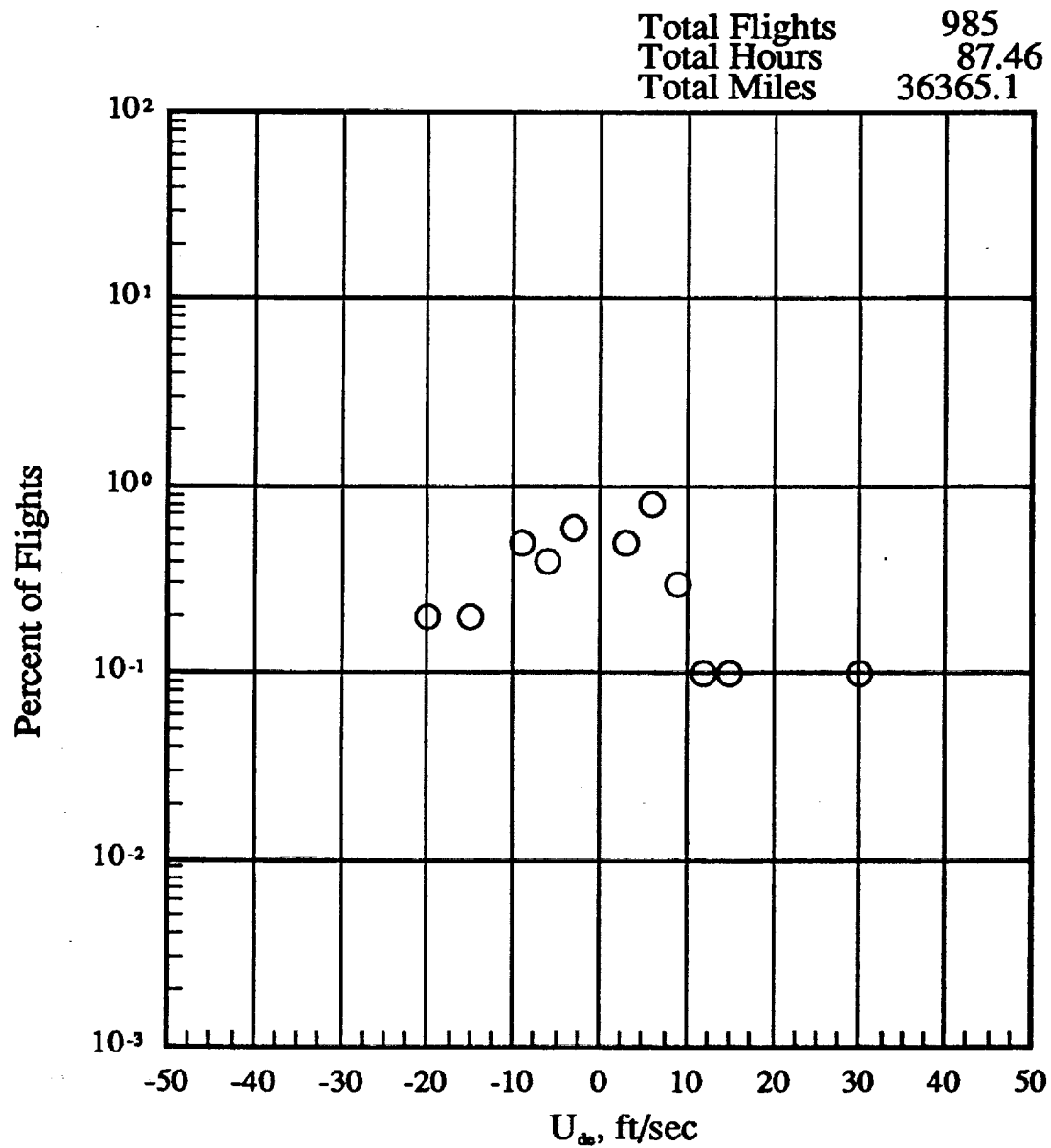
Figure 19.- Continued.



(e) 14500 to 19500 feet altitude

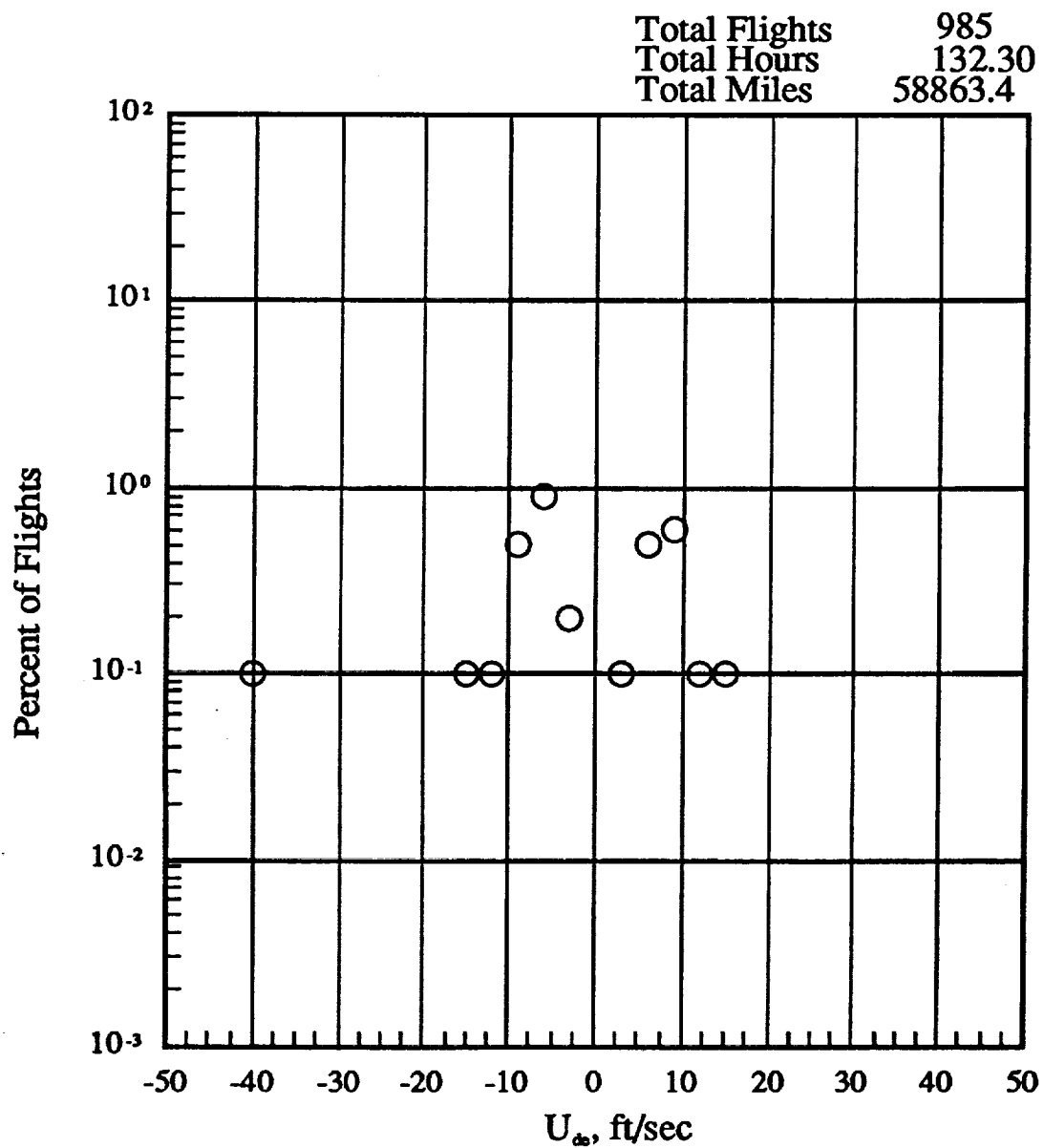
Figure 19.- Continued.





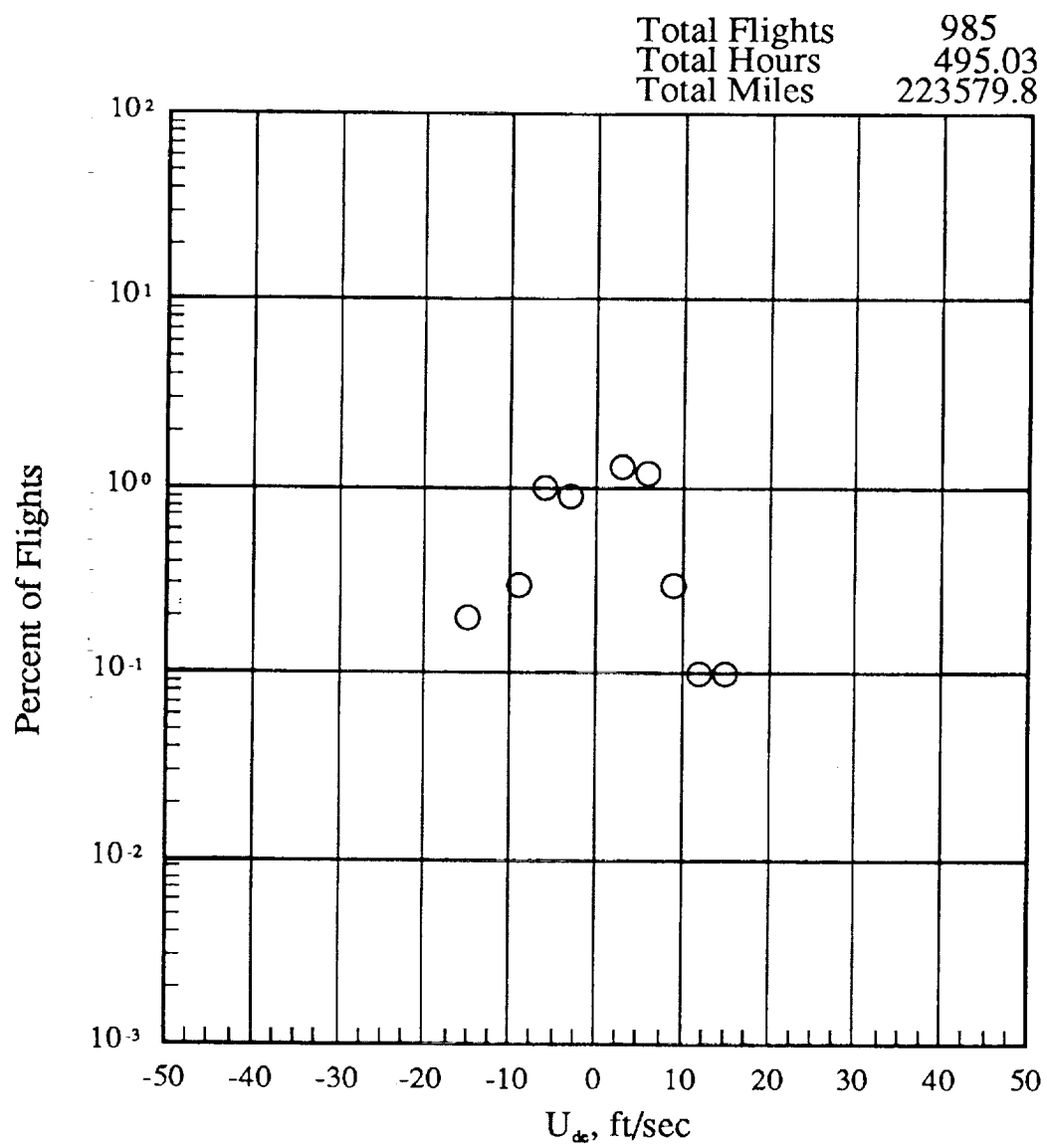
(f) 19500 to 24500 feet altitude

Figure 19.- Continued.



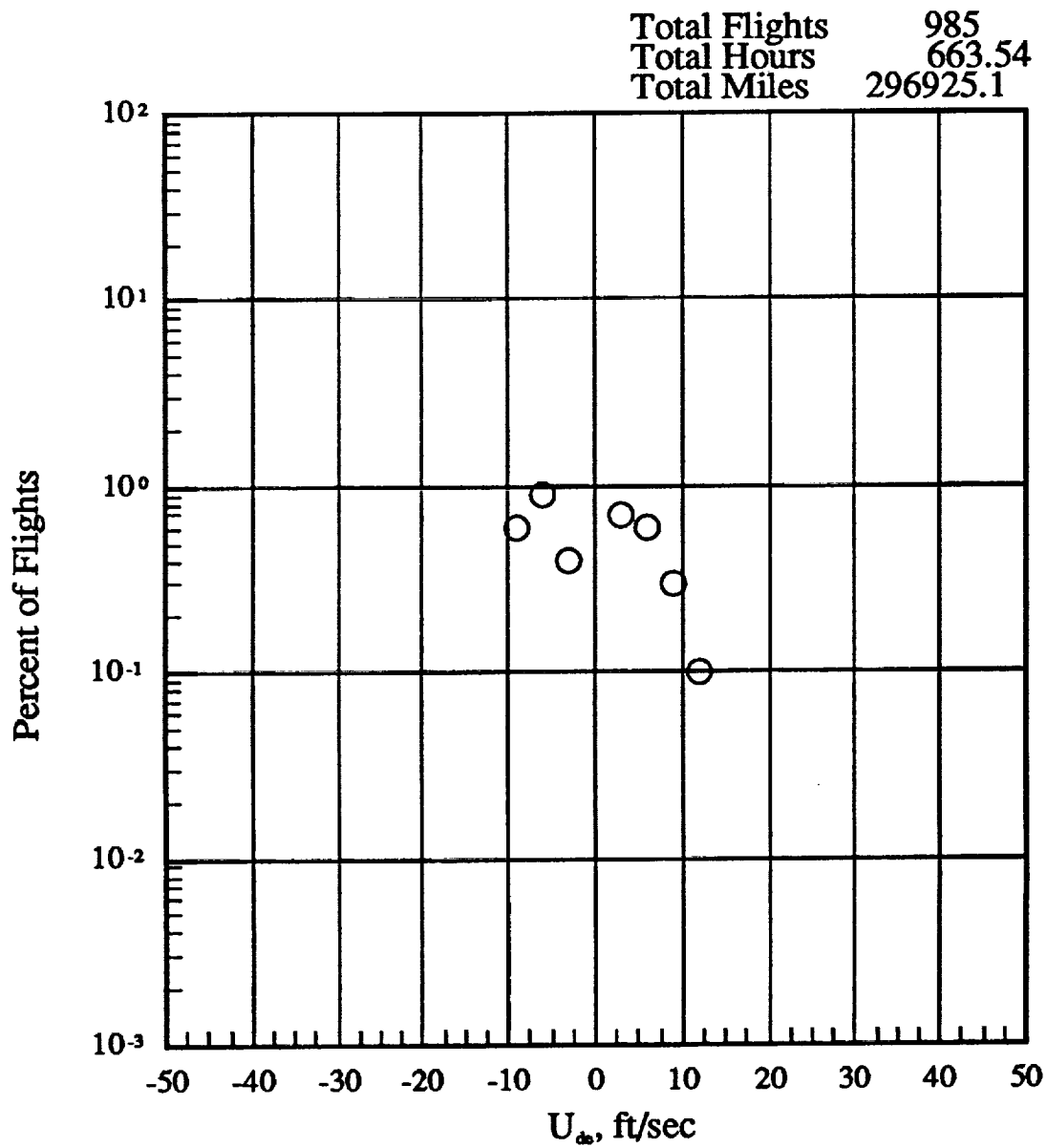
(g) 24500 to 29500 feet altitude

Figure 19.- Continued.



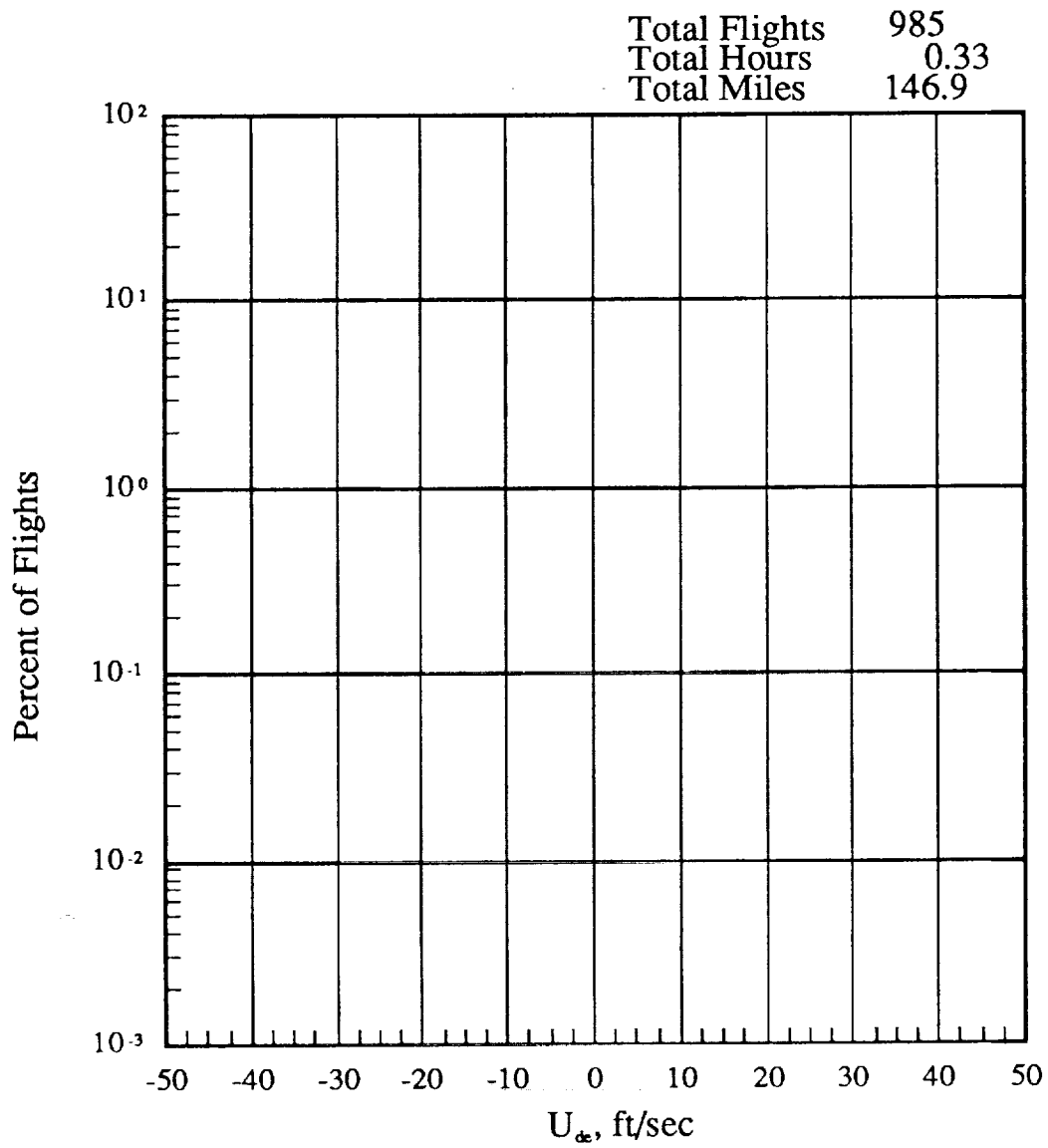
(h) 29500 to 34500 feet altitude

Figure 19.- Continued.



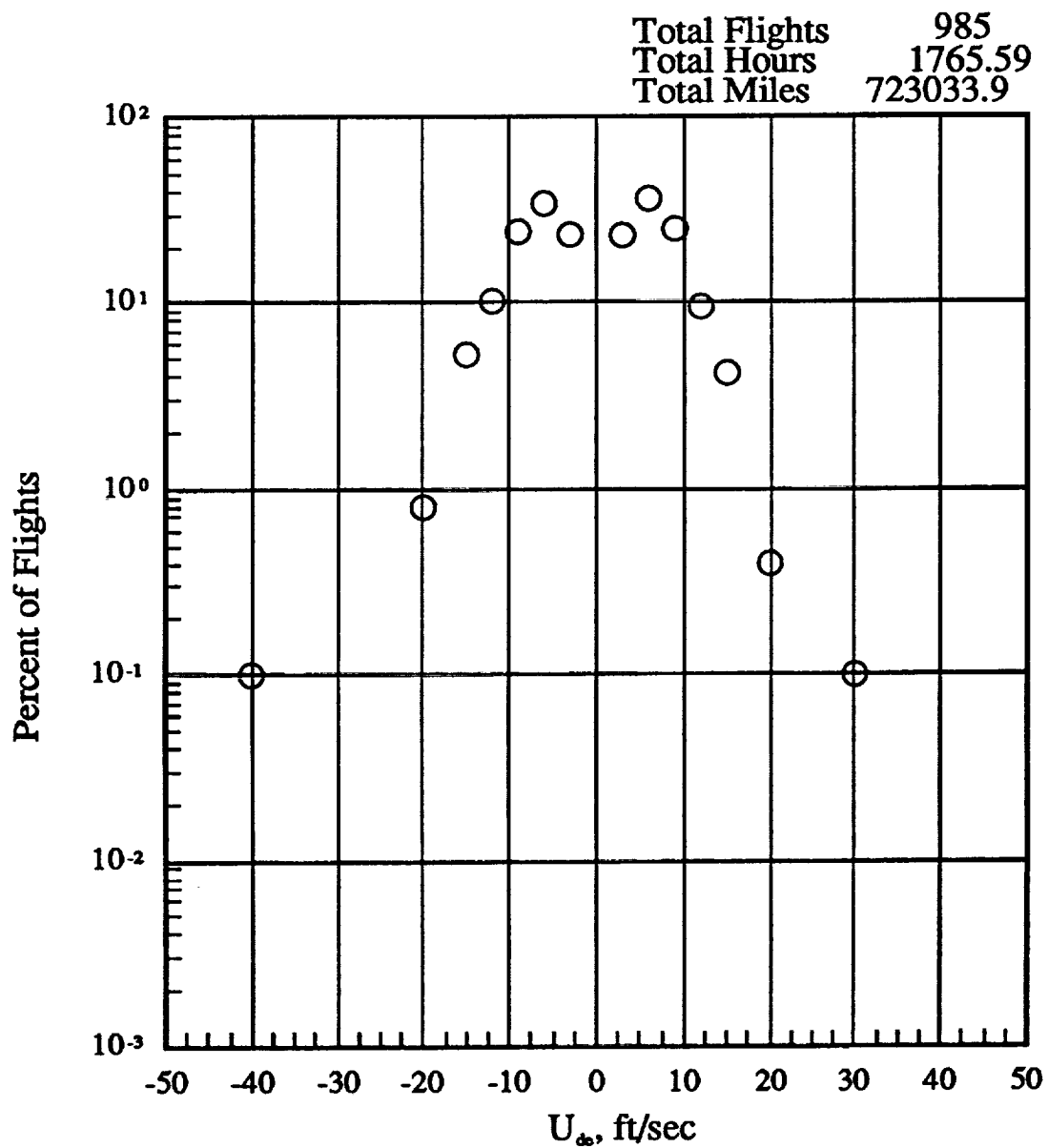
(i) 34500 to 39500 feet altitude

Figure 19.- Continued.



(j) 39500 to 44500 feet altitude

Figure 19.- Continued.



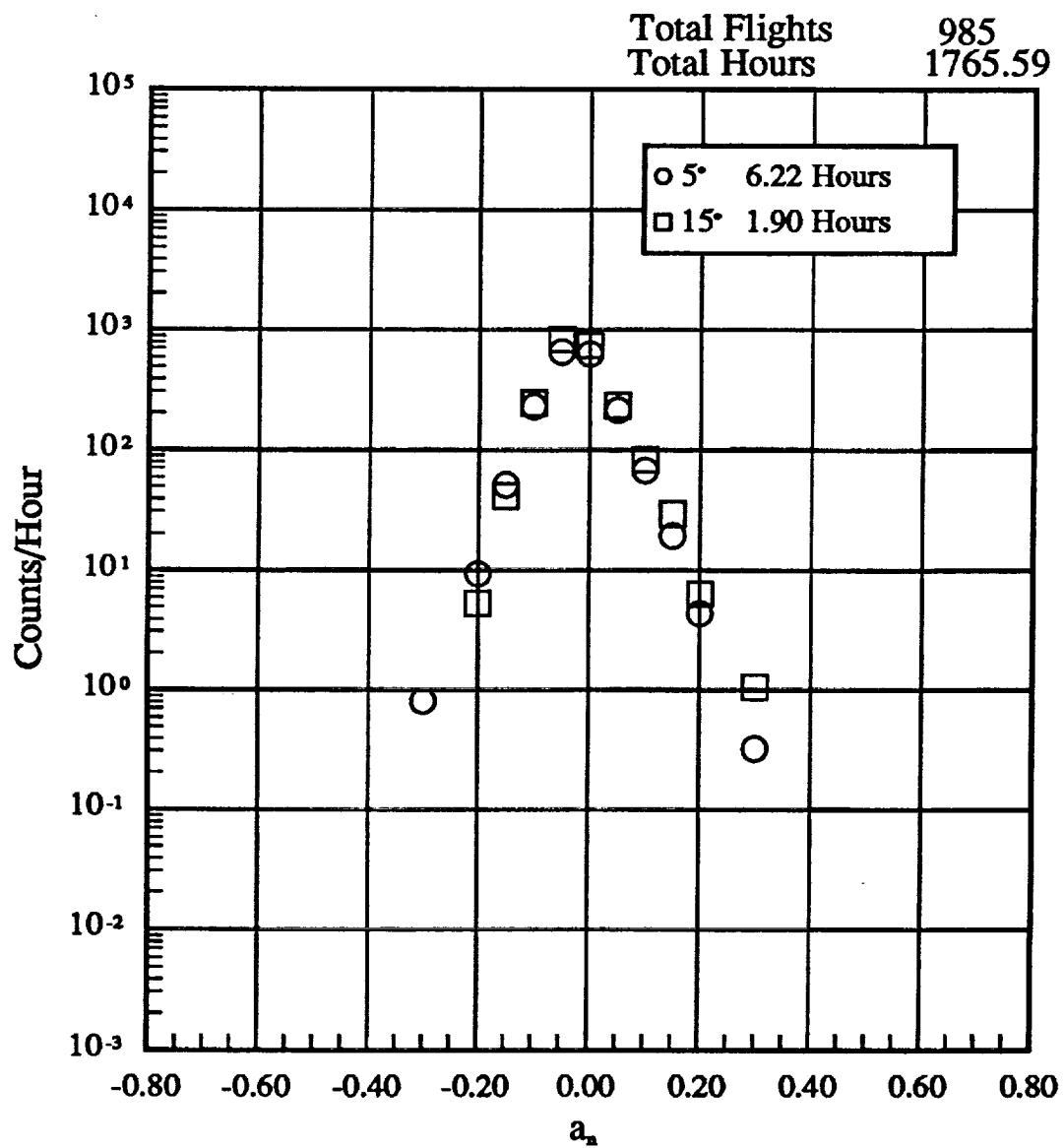
(k) -500 to 44500 feet altitude

Figure 19.- Concluded.

FLAP DETENT							
$a_n$ LEVEL g's	5	15	20	25	30	40	45
1.60	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0
.50	0	0	0	0	0	0	0
.40	0	0	0	0	0	0	0
.30	0.321	1.053	0	0	0	0	0
.20	4.339	6.318	0	0	0	0	0
.15	19.446	29.484	0	0	0	0	0
.10	67.178	82.662	0	0	0	0	0
.05	214.069	232.190	0	92.308	0	0	0
0	626.297	733.952	300.000	184.615	0	0	0
-.05	651.368	830.830	1200.000	1200.000	0	0	0
-.10	229.015	244.826	600.000	369.231	0	0	0
-.15	50.946	41.068	0	0	0	0	0
-.20	9.321	5.265	0	0	0	0	0
-.30	0	0	0	0	0	0	0
-.40	0	0	0	0	0	0	0
-.50	0	0	0	0	0	0	0
-.60	0	0	0	0	0	0	0
-.70	0	0	0	0	0	0	0
-.80	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0
FLIGHT HOURS IN DETENT	6.222	1.899	0.003	0.011	0	0	0
TOTAL HOURS							
TOTAL FLIGHTS							
TOTAL FLIGHT HOURS FLAPS UP AND DOWN							
TOTAL FLIGHT MILES FLAPS UP AND DOWN							
8.14							
985							
1765.59							
723033.21							

(a) Take off

Figure 20.-  $a_n$  exceedances with flaps deflected.



(b) Take off

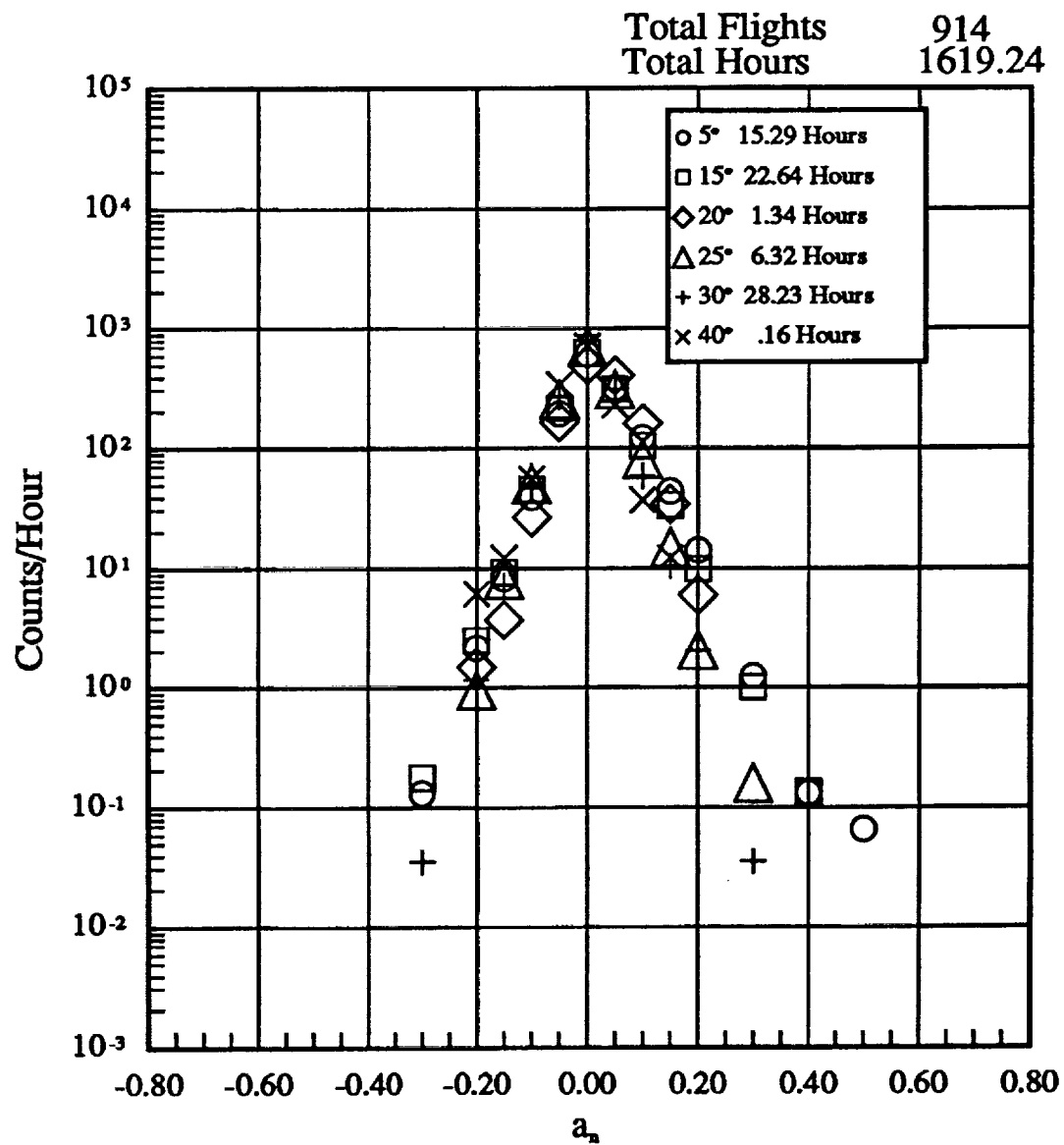
Figure 20.- Continued.



FLIGHT LEVEL G'S	FLAP DETENT									
	5	15	20	25	30	40	45			
1.60	0	0	0	0	0	0	0			
1.40	0	0	0	0	0	0	0			
1.20	0	0	0	0	0	0	0			
1.00	0	0	0	0	0	0	0			
.80	0	0	0	0	0	0	0			
.70	0	0	0	0	0	0	0			
.60	0	0	0	0	0	0	0			
.50	0.065	0	0	0	0	0	0			
.40	0.131	0.133	0	0	0	0	0			
.30	1.243	1.016	0	0.158	0.035	0	0			
.20	14.261	9.896	5.985	2.055	2.055	0	0			
.15	43.700	33.620	34.414	15.021	10.485	12.350	0			
.10	121.413	104.440	160.100	80.638	58.412	37.050	0			
.05	317.869	314.557	401.746	308.795	310.021	228.473	0			
0	606.430	622.841	492.269	698.070	871.013	716.295	0			
-.05	193.574	215.242	164.589	256.143	266.097	339.623	0			
-.10	39.382	45.593	26.933	50.280	46.581	55.575	0			
-.15	8.243	9.366	3.741	8.064	7.226	12.350	0			
-.20	2.159	2.518	1.496	0.949	1.169	6.175	0			
-.30	0.131	0.177	0	0	0.035	0	0			
-.40	0	0	0	0	0	0	0			
-.50	0	0	0	0	0	0	0			
-.60	0	0	0	0	0	0	0			
-.70	0	0	0	0	0	0	0			
-.80	0	0	0	0	0	0	0			
-1.00	0	0	0	0	0	0	0			
-1.20	0	0	0	0	0	0	0			
-1.40	0	0	0	0	0	0	0			
-1.60	0	0	0	0	0	0	0			
FLIGHT HOURS IN DETENT	15.286	22.635	1.337	6.325	28.230	0.162	0			
TOTAL HOURS							73.97			
TOTAL FLIGHTS							985			
TOTAL FLIGHT HOURS FLAPS UP AND DOWN							1765.59			
TOTAL FLIGHT MILES FLAPS UP AND DOWN							723033.21			

(c) Landing

Figure 20.- Continued.



(d) Landing.

Figure 20.- Concluded.

MAXIMUM <sup>a</sup> LEVEL FOR EACH FLIGHT g's		EAS KTS																											
FROM	TO	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320							
1.60	1.80	0																											
1.40	1.60	0																											
1.20	1.40	0																											
1.00	1.20	0																											
.80	1.00	0																											
.70	0.80	0																											
.60	0.70	0																											
.50	0.60	0																											
.40	0.50	0																											
.30	0.40	0																											
.20	0.30	0																											
.15	0.20	0																											
.10	0.15	0																											
.05	0.10	0																											
-.05	-0.10	0																											
-.10	-0.15	0																											
-.15	-0.20	0																											
-.20	-0.30	0																											
-.30	-0.40	0																											
-.40	-0.50	0																											
-.50	-0.60	0																											
-.60	-0.70	0																											
-.70	-0.80	0																											
-.80	-1.00	0																											
-1.00	-1.20	0																											
-1.20	-1.40	0																											
-1.40	-1.60	0																											
-1.60	-1.80	0																											
TOTAL PEAKS @ EAS		1.0	0	16	164	473	456	221	51	8	0	0	0	0	0	0	0	0	0	0	0	0							
FLIGHT HOURS @ EAS		0	0	0.1	0.7	2.0	2.1	1.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0							
FLIGHT MILES @ EAS		0	0	8	111	355	378	217	49	9	0	0	0	0	0	0	0	0	0	0	0	0							
TOTAL FLIGHTS INCLUDED																						973.50							
TOTAL FLIGHTS ANALYZED																						985							
TOTAL FLIGHT HOURS, ANY FLAP																						1765.59							
TOTAL FLIGHT MILES, ANY FLAP																						723033.26							

ORIGINAL PAGE IS  
OF POOR QUALITY

(a) Take off; flaps 5 degree detent

Figure 21.- Peak positive and negative  $a_n$  per flight vs EAS bands; percent of flights.





MAXIMUM $g_z$ LEVEL FOR EACH FLIGHT		EAS KTS																										
FROM	TO	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320						
1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.80	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.70	0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.60	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.50	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.40	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.30	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.20	0.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.15	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.10	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
.05	0.10	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.05	-0.10	0	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.10	-0.15	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.15	-0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.20	-0.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.30	-0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.40	-0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.50	-0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.60	-0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.70	-0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-.80	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
TOTAL FRAMES @ EAS		0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
FLIGHT HOURS @ EAS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
FLIGHT MILES @ EAS		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
		TOTAL FLIGHTS INCLUDED 3																										
		TOTAL FLIGHTS REALIZED 985																										
		TOTAL FLIGHT HOURS, ANY FLAP 1765.59																										
		TOTAL FLIGHT MILES, ANY FLAP 723033.26																										

ORIGINAL PAGE IS  
OF POOR QUALITY

(d) Take off; flaps 22 degree detent

Figure 21.- Continued.

ORIGINAL PAGE IS  
OF POOR QUALITY

**Figure 21.- Continued.**

MAXIMUM $a_n$ LEVEL FOR EACH FLIGHT		EAS KTS																									
FROM	TO	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320					
1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.80	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.70	0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.60	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.50	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.40	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.30	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
.20	0.30	0	0	0	1	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0						
.15	0.20	0	0	0	3	6	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0						
.10	0.15	0	0	2	5	9	7	5	1	0	0	0	0	0	0	0	0	0	0	0	0						
.05	0.10	0	0	4	7	11	9	4	1	0	0	0	0	0	0	0	0	0	0	0	0						
-.05	-0.10	0	0	4	10	16	9	4	2	0	0	0	0	0	0	0	0	0	0	0	0						
-.10	-0.15	0	0	2	8	7	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.15	-0.20	0	0	1	2	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.20	-0.30	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.30	-0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.40	-0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.50	-0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.60	-0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.70	-0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-.80	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
TOTAL FRAMES @ EAS		0	11	131	377	554	387	199	77	17	0	2	1	0	1	0	0	0	0	0	0						
FLIGHT HOURS @ EAS		0	0.2	2.1	7.0	7.0	4.0	1.6	0.4	0.1	0	0	0.1	0	0	0	0	0	0	0	0						
FLIGHT MILES @ EAS		0	35	325	1136	1212	732	302	87	17	4	9	24	8	3	1	0	0	0	0	0						
		TOTAL FLIGHTS INCLUDED																									
		TOTAL FLIGHTS ANALYZED																									
		TOTAL FLIGHT HOURS, ANY FLAP																									
		TOTAL FLIGHT MILES, ANY FLAP																									
		984																									
		985																									
		1765.59																									
		723033.26																									

ORIGINAL PAGE IS  
OF POOR QUALITY

(f) Landing; flaps 15 degree detent

Figure 21.- Continued.







MAXIMUM $q$ LEVEL FOR EACH FLIGHT g's		KIAS KTS																							
FROM	TO	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320			
1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.80	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.70	0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.60	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.50	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.40	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.30	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.20	0.30	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.15	0.20	1	5	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.10	0.15	2	13	10	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
.05	0.10	5	24	11	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.05	-0.10	4	23	12	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.10	-0.15	2	13	9	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.15	-0.20	1	5	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.20	-0.30	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.30	-0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.40	-0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.50	-0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.60	-0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.70	-0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-.80	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TOTAL FEASIBLE KIAS	146	804	497	195	62	0.6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
FLIGHT HOURS @ KIAS	3.7	13.9	7.6	2.4	0.6		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
FLIGHT MILES @ KIAS	489	1920	1112	376	101		9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		TOTAL FLIGHTS INCLUDED																				975			
		TOTAL FLIGHTS ANALYZED																				965			
		TOTAL FLIGHT HOURS, ANY FLAP																				1765.59			
		TOTAL FLIGHT MILES, ANY FLAP																				723033.26			

ORIGINAL PAGE IS  
OF POOR QUALITY

(i) Landing; flaps 30 degree detent

Figure 21.- Continued.

MAXIMUM $q_z$ LEVEL FOR EACH FLIGHT g's		EAS KTS																						TOTAL FLIGHTS INCLUDED TOTAL FLIGHTS ANALYZED TOTAL FLIGHT HOURS, ANY FLAP TOTAL FLIGHT MILES, ANY FLAP			7 905 1765.59 723035.26		
		120 130	130 140	140 150	150 160	160 170	170 180	180 190	190 200	200 210	210 220	220 230	230 240	240 250	250 260	260 270	270 280	280 290	290 300	300 310	310 320								
FROM	TO	1.60	1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		1.40	1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		1.20	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		1.00	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.80	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.70	0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.60	0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.50	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.40	0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.30	0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.20	0.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.15	0.20	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.10	0.15	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		.05	0.10	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.05	-0.10	14	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.10	-0.15	0	14	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.15	-0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.20	-0.30	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.30	-0.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.40	-0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.50	-0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.60	-0.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.70	-0.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-.80	-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-1.00	-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-1.20	-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-1.40	-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
		-1.60	-1.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
TOTAL PEAKS @ EAS		2	2	5	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
FLIGHT HOURS @ EAS		0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
FLIGHT MILES @ EAS		4	6	10	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							

# PRESSURE ALTITUDE BANDS

LEVEL g's	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.40	0.61	0	0	0	0.65	3.23	3.61	5.42	2.07	0	0.52	0	0	0	0	0	0	0.08	0.42	2.74
.30	6.42	1.02	0	0	3.23	12.94	8.13	7.22	5.69	1.75	0	0	0.52	0	0	0	0	15.42	35.75	15.42
.20	40.59	6.14	20.47	75.25	27.17	53.69	55.98	24.83	28.97	3.50	15.74	10.31	7.73	0.69	0	0	0	78.51	177.81	78.51
.15	91.71	20.47	20.47	75.25	27.17	53.69	55.98	24.83	28.97	3.50	15.74	10.31	7.73	0.69	0	0	0	78.51	177.81	78.51
.10	198.69	75.25	204.75	552.82	137.14	562.16	504.74	844.38	89.51	132.04	1078.16	926.02	1005.27	17.77	18.84	5.02	36.40	132.58	784.47	132.58
.05	397.14	204.75	552.82	137.14	562.16	504.74	844.38	89.51	132.04	1078.16	926.02	1005.27	17.77	18.84	5.02	36.40	132.58	784.47	132.58	784.47
0	651.57	552.82	137.14	562.16	504.74	844.38	89.51	132.04	1078.16	926.02	1005.27	17.77	18.84	5.02	36.40	132.58	784.47	132.58	784.47	132.58
-.05	266.90	138.21	39.14	7.17	8.41	5.18	6.32	0.90	0.52	0	0.52	0	0	0	0	0	0	3.01	0.62	10.91
-.10	79.36	39.14	7.17	8.41	5.18	6.32	0.90	0.52	0	0.52	0	0	0	0	0	0	0	3.01	0.62	10.91
-.15	24.47	7.17	8.41	5.18	6.32	0.90	0.52	0	0.52	0	0.52	0	0	0	0	0	0	3.01	0.62	10.91
-.20	6.18	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
-.30	0.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	8.25	1.95	1.55	1.11	1.93	1.14	1.94	7.26	25.93	8618.85	64	25.93	8618.85	64	25.93	8618.85	64	25.93	8618.85	64
FLIGHT MILES @ ALT	1509.73	468.11	479.05	419.35	770.93	480.15	869.28	3264.04	358.21	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80

TOTAL FLIGHTS  
TOTAL FLIGHT HOURS FLAPS UP AND DOWN  
TOTAL FLIGHT MILES FLAPS UP AND DOWN

(a)  $a_n$  Level crossing counts per hour within pressure altitude bands

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Figure 22.- Normal acceleration exceedances; Non-revenue flights.

PRESSURE ALTITUDE BANDS

a <sub>nm</sub> LEVEL g's	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	8.25	1509.73	1.95	468.11	1.55	479.05	1.11	1.93	1.14	1.94	7.26	0.80	25.93	8618.85	64	25.93	8618.85	64	25.93	8618.85
1.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
.50	0	0	0	0	0	0	0	0.52	0	0	0	0	0	0	0	0	0	0	0.04	0
.40	0	0	0	0	0	0	0.90	0.52	0	0	0	0	0	0	0	0	0	0	0.08	0
.30	0.36	5.57	1.02	1.02	0.65	1.81	3.61	2.07	0	0	0.52	0.28	0	0	0	0	0	0	0.27	0
.20	15.87	36.47	15.87	47.09	5.18	3.61	9.03	8.80	0.87	0	0.52	0.41	0	0	0	0	0	0	2.43	0
.15	36.47	72.69	15.87	47.09	5.18	3.61	9.03	8.80	0.87	0	0.52	0.41	0	0	0	0	0	0	6.59	0
.10	72.69	156.41	111.59	29.69	18.11	20.70	37.02	20.70	20.11	20.11	2.06	0.41	1.26	10.05	35.48	15.53	15.53	15.53	15.53	15.53
.05	156.41	37.92	29.69	6.65	6.47	6.47	3.61	3.62	6.12	6.12	2.06	0.41	1.26	10.05	35.48	15.53	15.53	15.53	15.53	15.53
0	37.92	29.69	6.65	6.47	6.47	6.47	3.61	3.62	6.12	6.12	2.06	0.41	1.26	10.05	35.48	15.53	15.53	15.53	15.53	15.53
-.05	7.63	2.18	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.10	2.18	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.15	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.20	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.30	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.40	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.50	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.60	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.70	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-.80	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-1.00	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-1.20	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-1.40	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
-1.60	0	0	0	0	0	0	1.29	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
FLIGHT HOURS @ ALT	8.25	1509.73	1.95	468.11	1.55	479.05	1.11	1.93	1.14	1.94	7.26	0.80	25.93	8618.85	64	25.93	8618.85	64	25.93	8618.85
FLIGHT MILES @ ALT	1509.73	468.11	468.11	1509.73	1509.73	468.11	468.11	1509.73	468.11	468.11	1509.73	468.11	468.11	1509.73	468.11	468.11	1509.73	468.11	468.11	1509.73
TOTAL FLIGHTS																			64	
TOTAL FLIGHT HOURS FLAPS UP AND DOWN																			25.93	
TOTAL FLIGHT MILES FLAPS UP AND DOWN																			8618.85	

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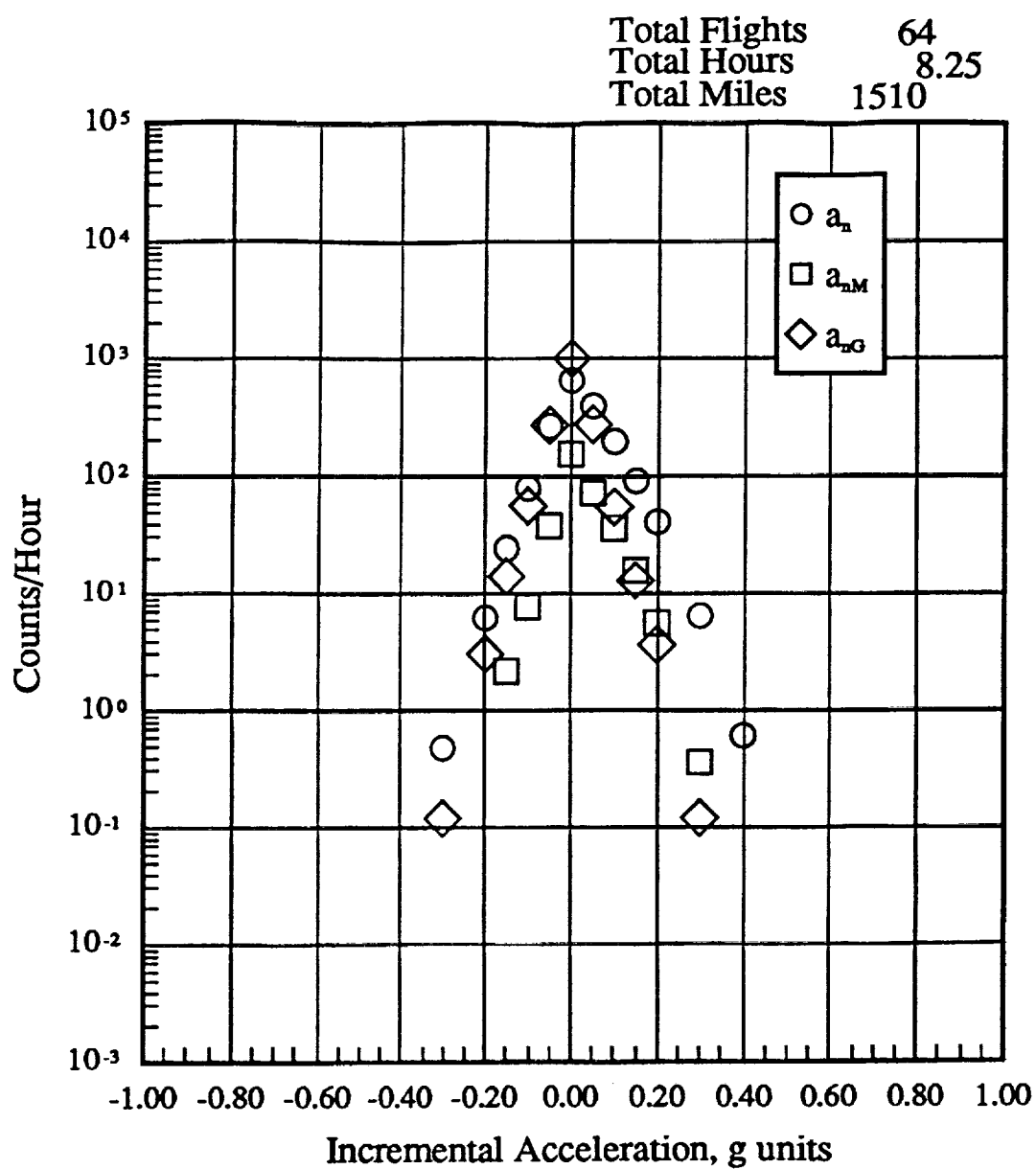
(b) a<sub>nm</sub> Level crossing counts per hour within pressure altitude bands

PRESSURE ALTITUDE BANDS

a <sub>RG</sub> LEVEL g's	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT
1.60	8.25	1509.73	1.95	468.11	1.55	479.05	1.11	419.35	1.93	770.93	1.14	490.15	1.94	869.28	7.26	3264.04	0.80	358.21	25.93	8618.85
1.40																				
1.20																				
1.00																				
.80																				
.70																				
.60																				
.50																				
.40																				
.30																				
.20																				
.15																				
.10																				
.05																				
0																				
-.05																				
-.10																				
-.15																				
-.20																				
-.30																				
-.40																				
-.50																				
-.60																				
-.70																				
-.80																				
-1.00																				
-1.20																				
-1.40																				
-1.60																				
TOTAL FLIGHTS	64																			
TOTAL FLIGHT HOURS FLAPS UP AND DOWN	25.93																			
TOTAL FLIGHT MILES FLAPS UP AND DOWN	8618.85																			

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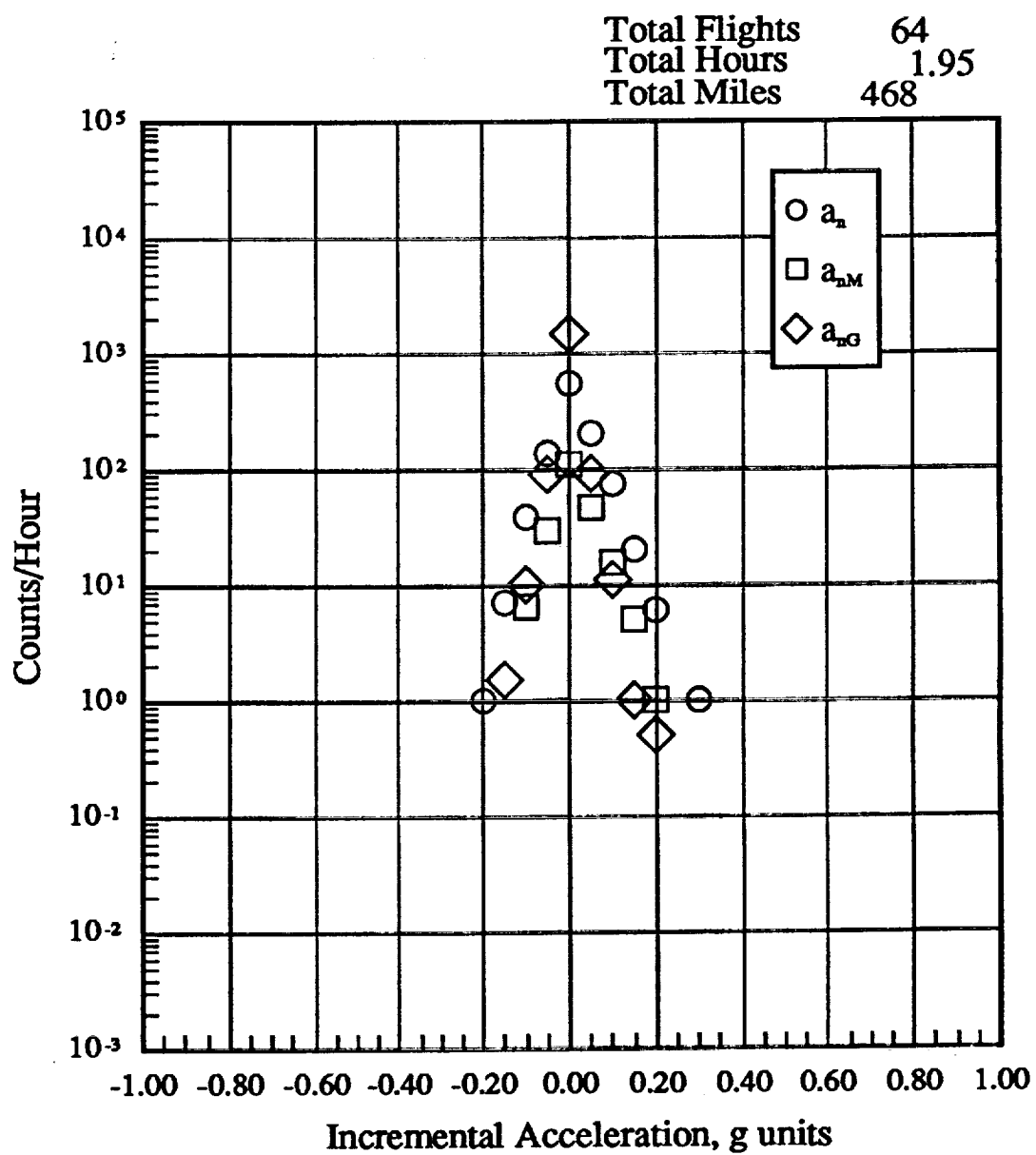
(c) a<sub>RG</sub> Level crossing counts per hour within pressure altitude bands



(d)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , -500 to 4500 feet altitude

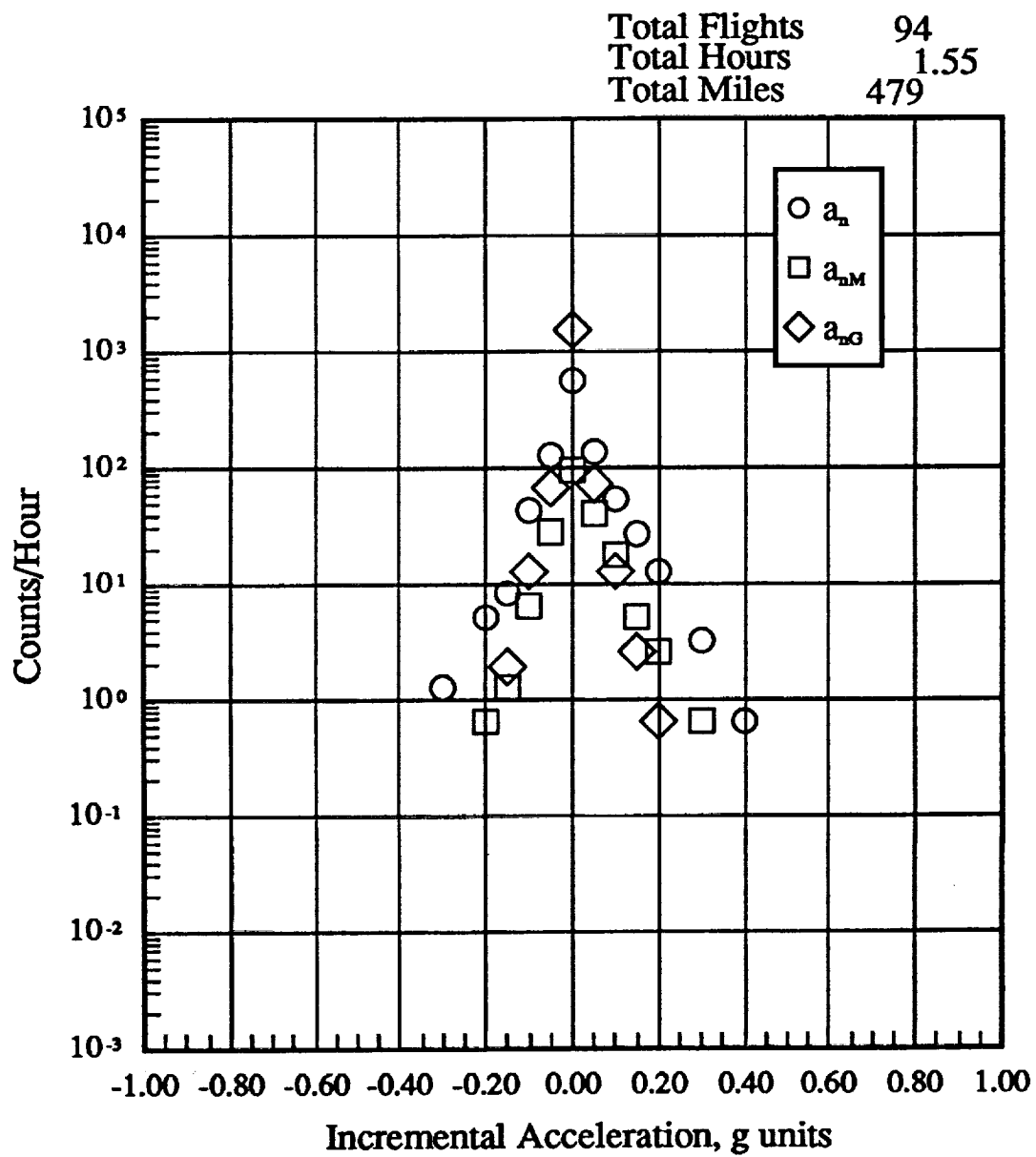
Figure 22.- Continued.





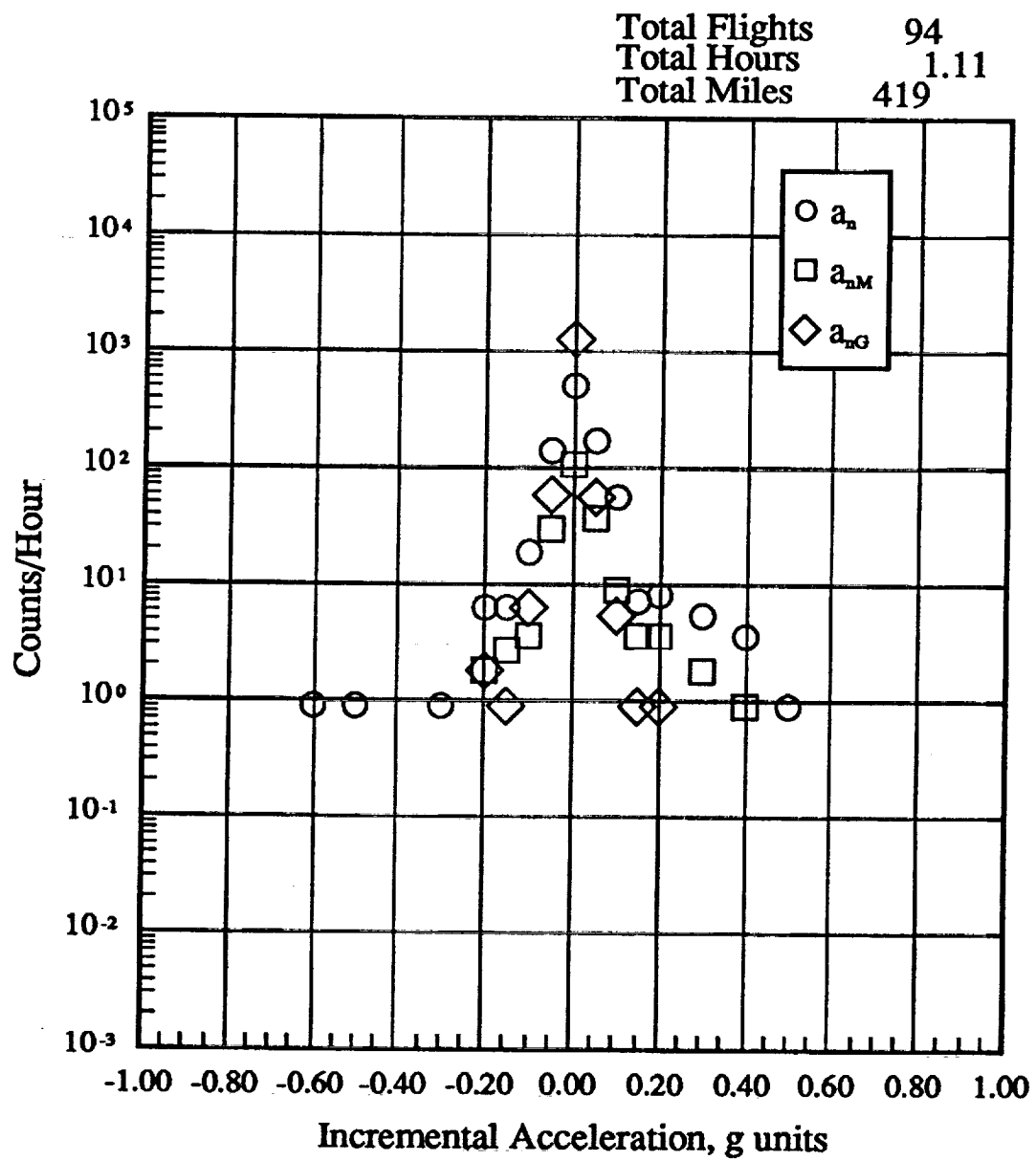
(e)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 4500 to 9500 feet altitude

Figure 22.- Continued.



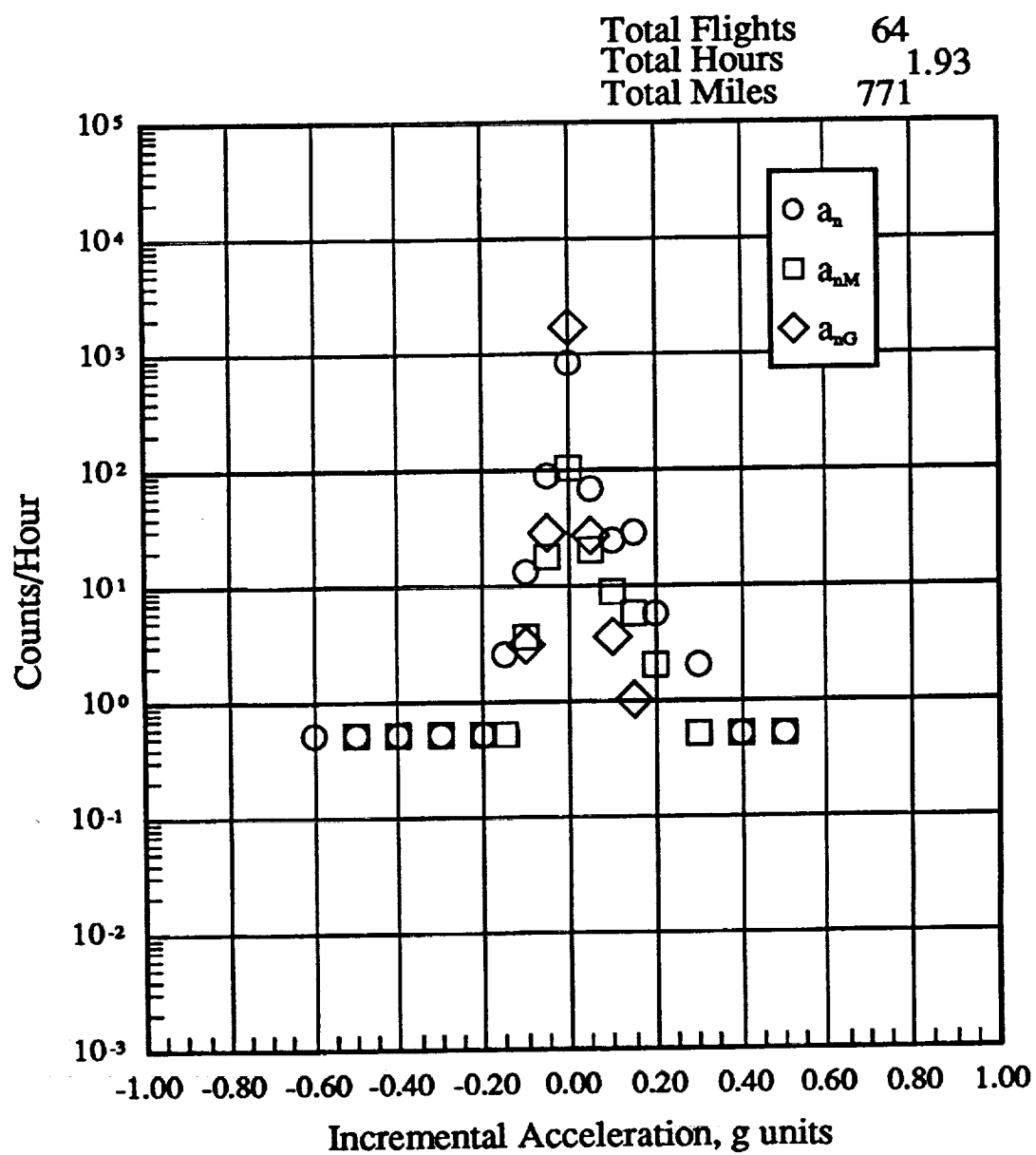
(f)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 9500 to 14500 feet altitude

Figure 22.- Continued.



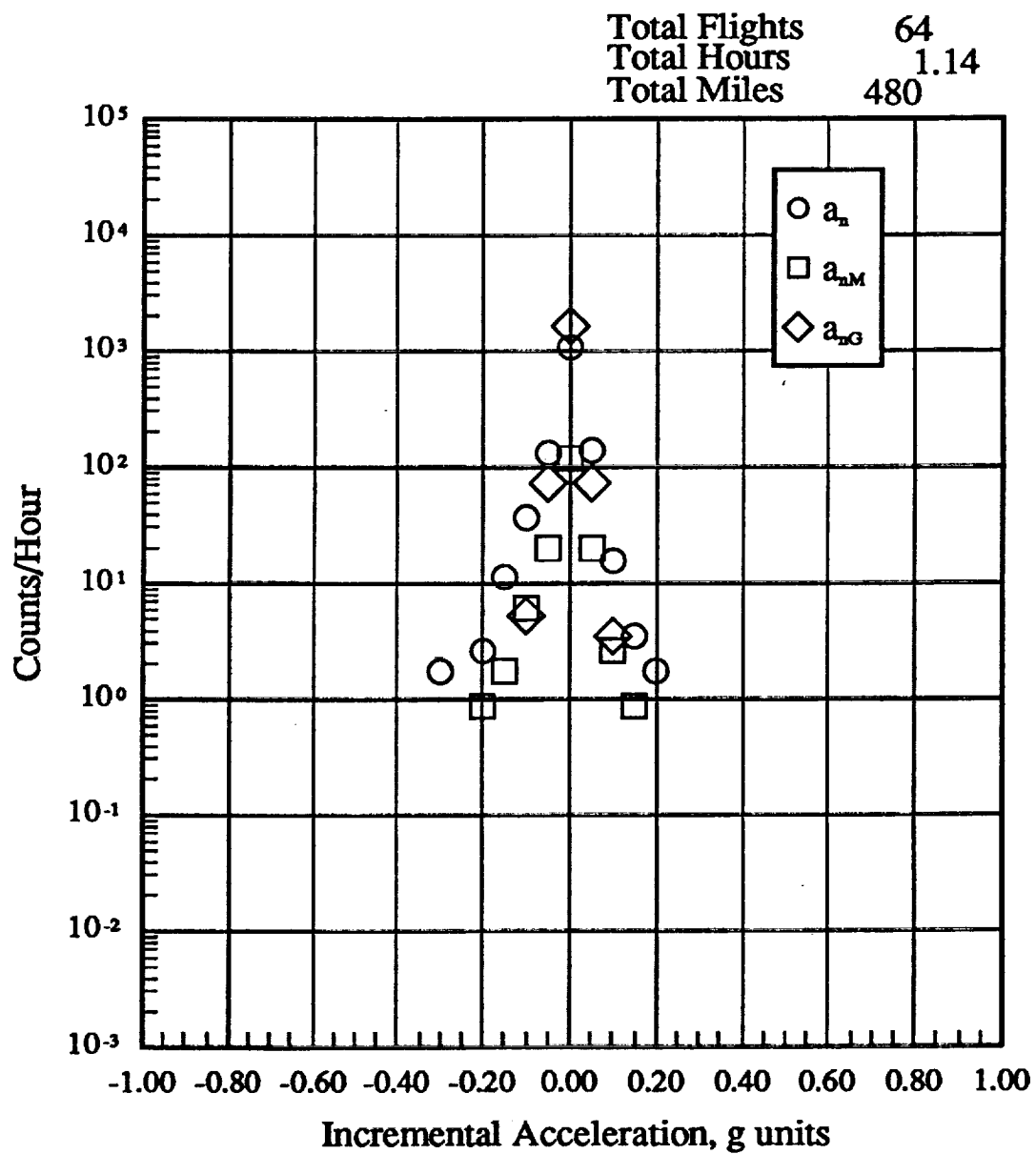
(g)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 14500 to 19500 feet altitude

Figure 22.- Continued.



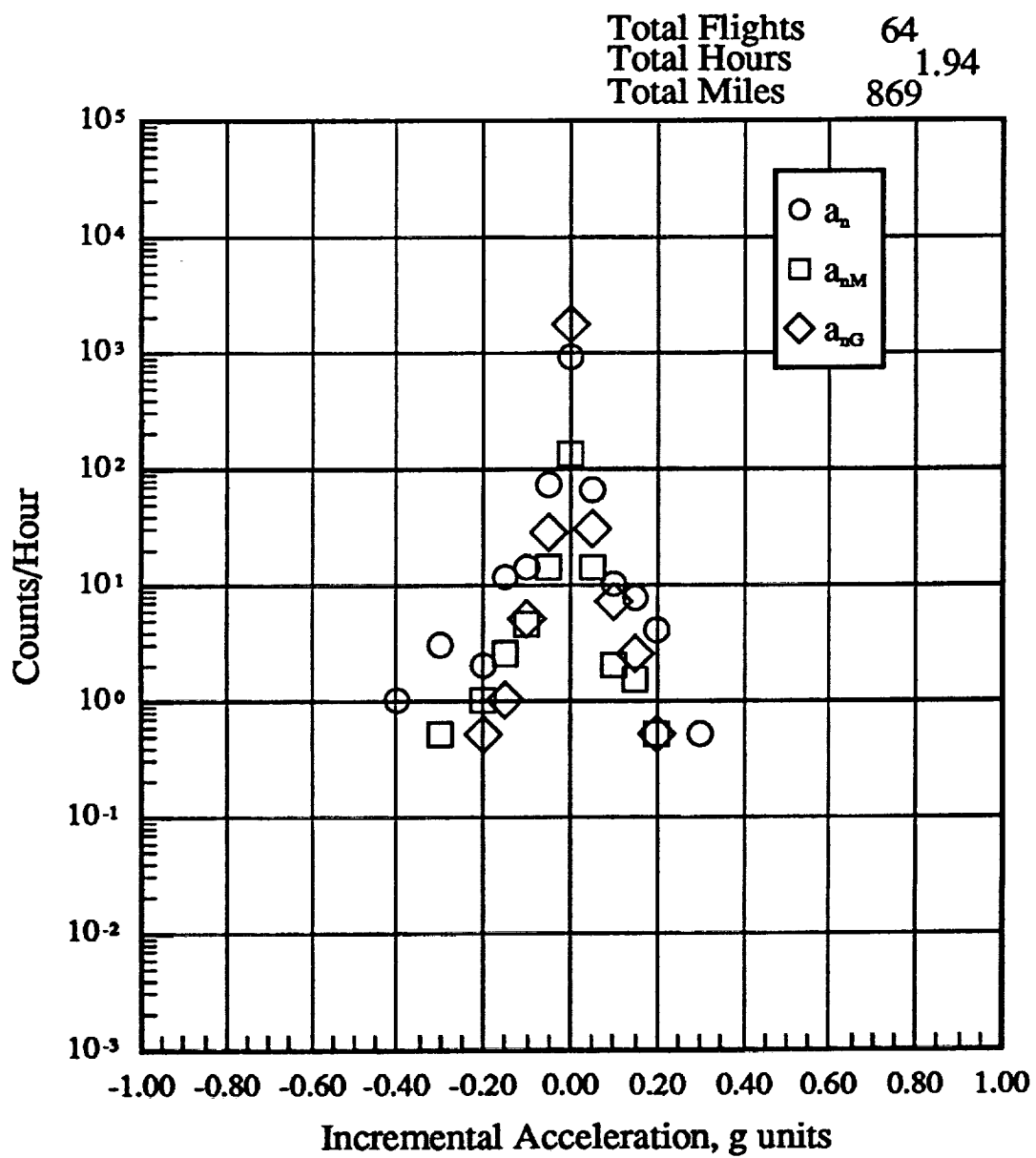
(h)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 19500 to 24500 feet altitude

Figure 22.- Continued.



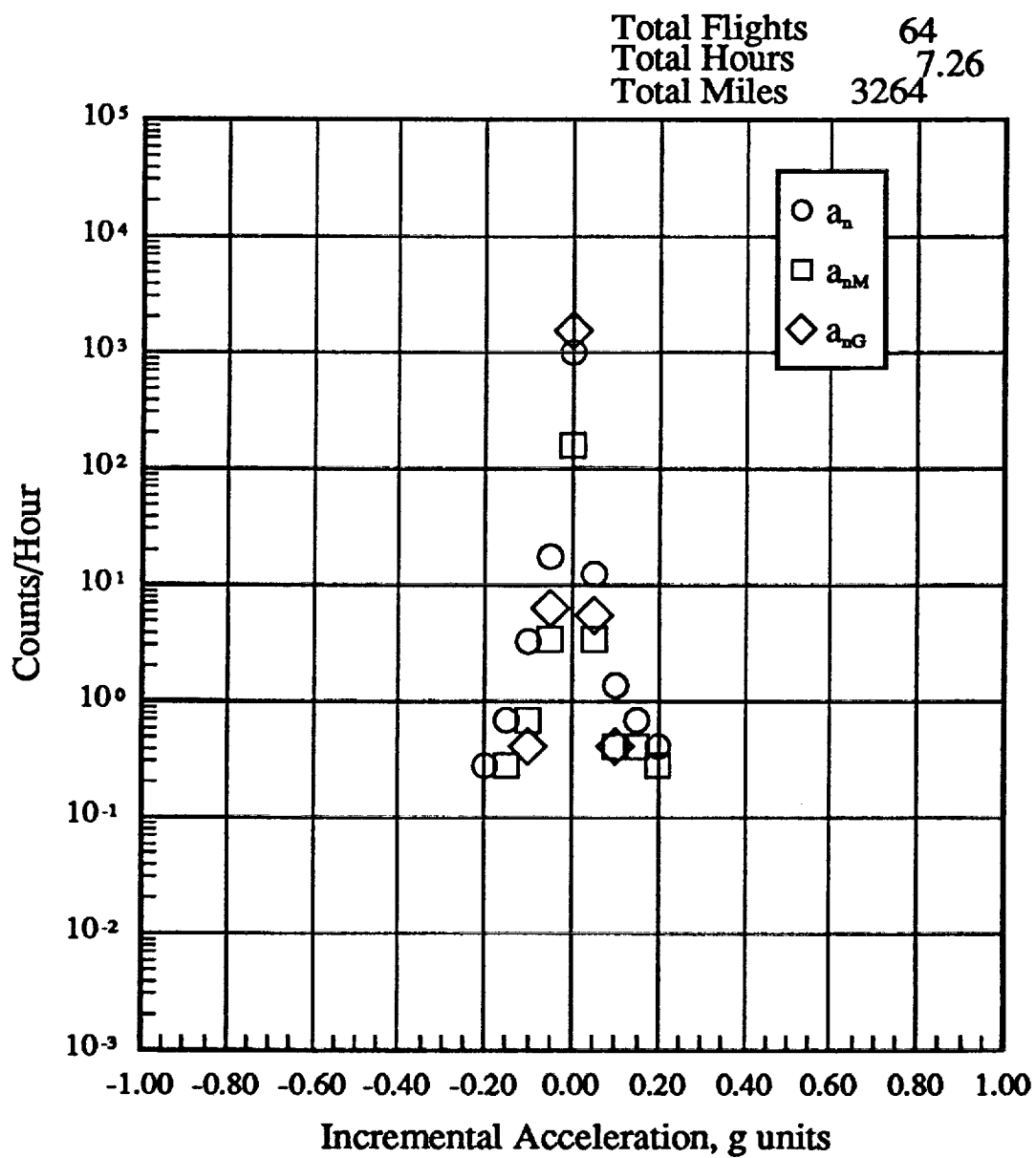
(i)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 24500 to 29500 feet altitude

Figure 22.- Continued.



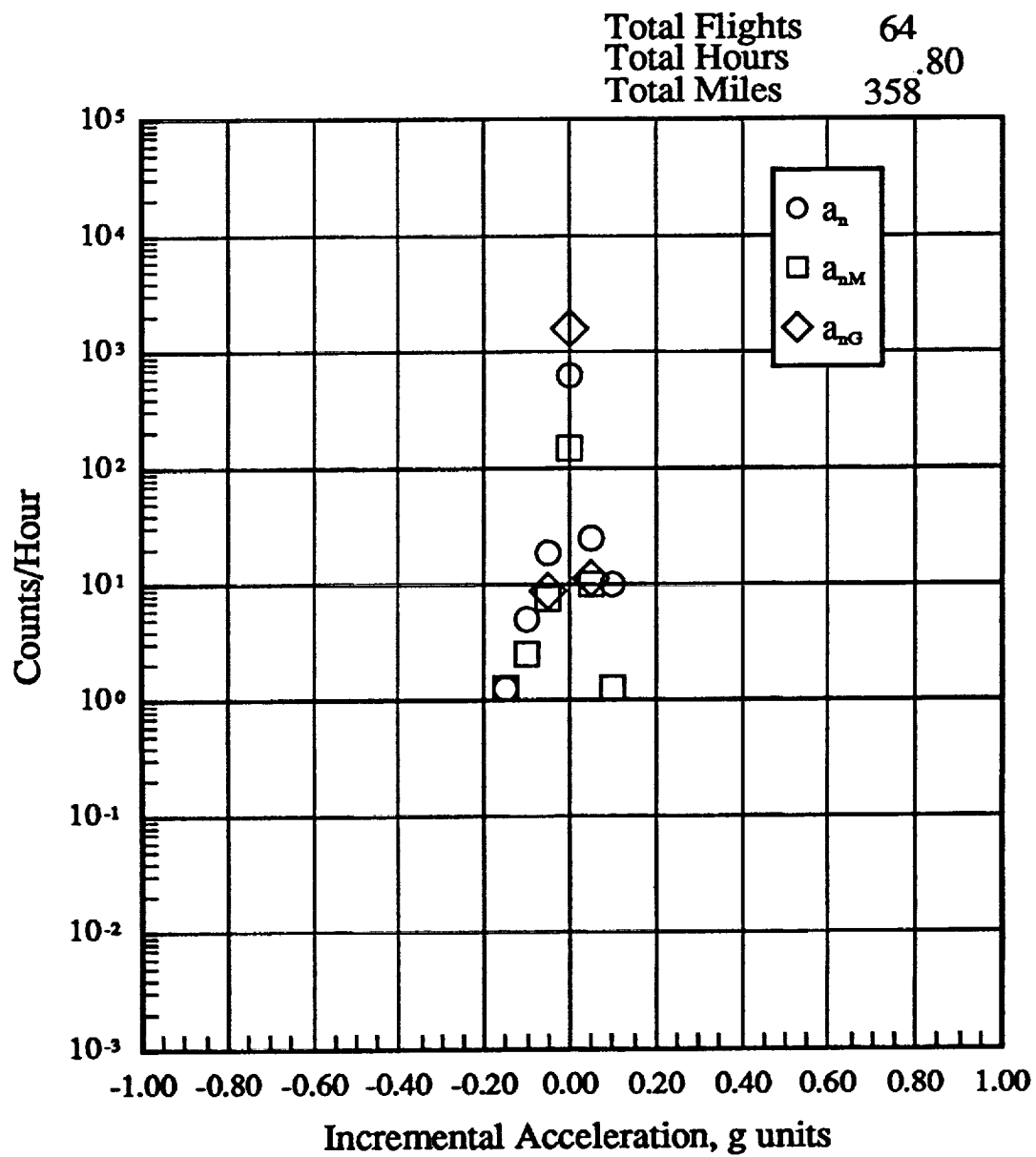
(j)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 29500 to 34500 feet altitude

Figure 22.- Continued.



(k)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 34500 to 39500 feet altitude

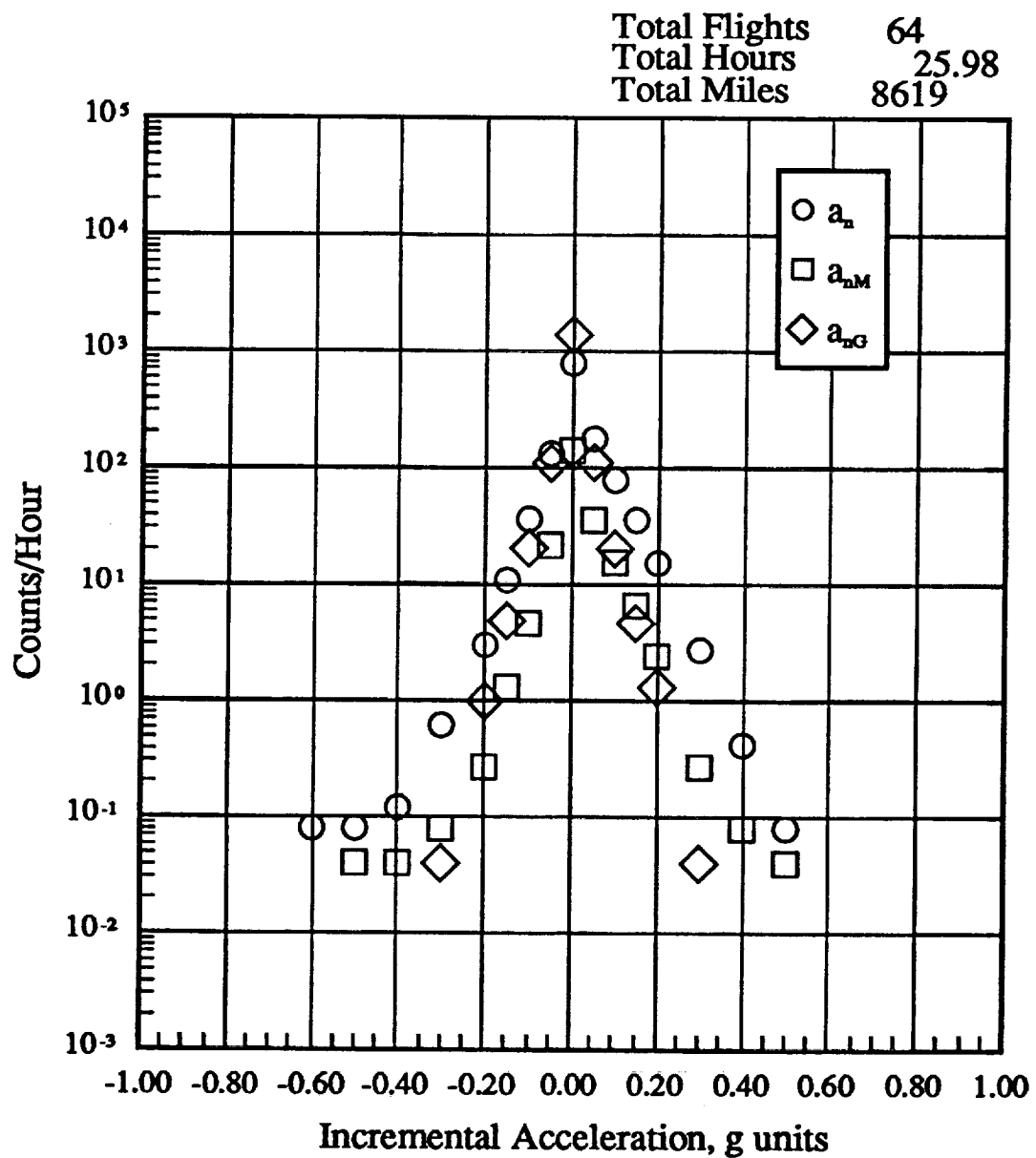
Figure 22.- Continued.



(l)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , 39500 to 44500 feet altitude

Figure 22.- Continued.



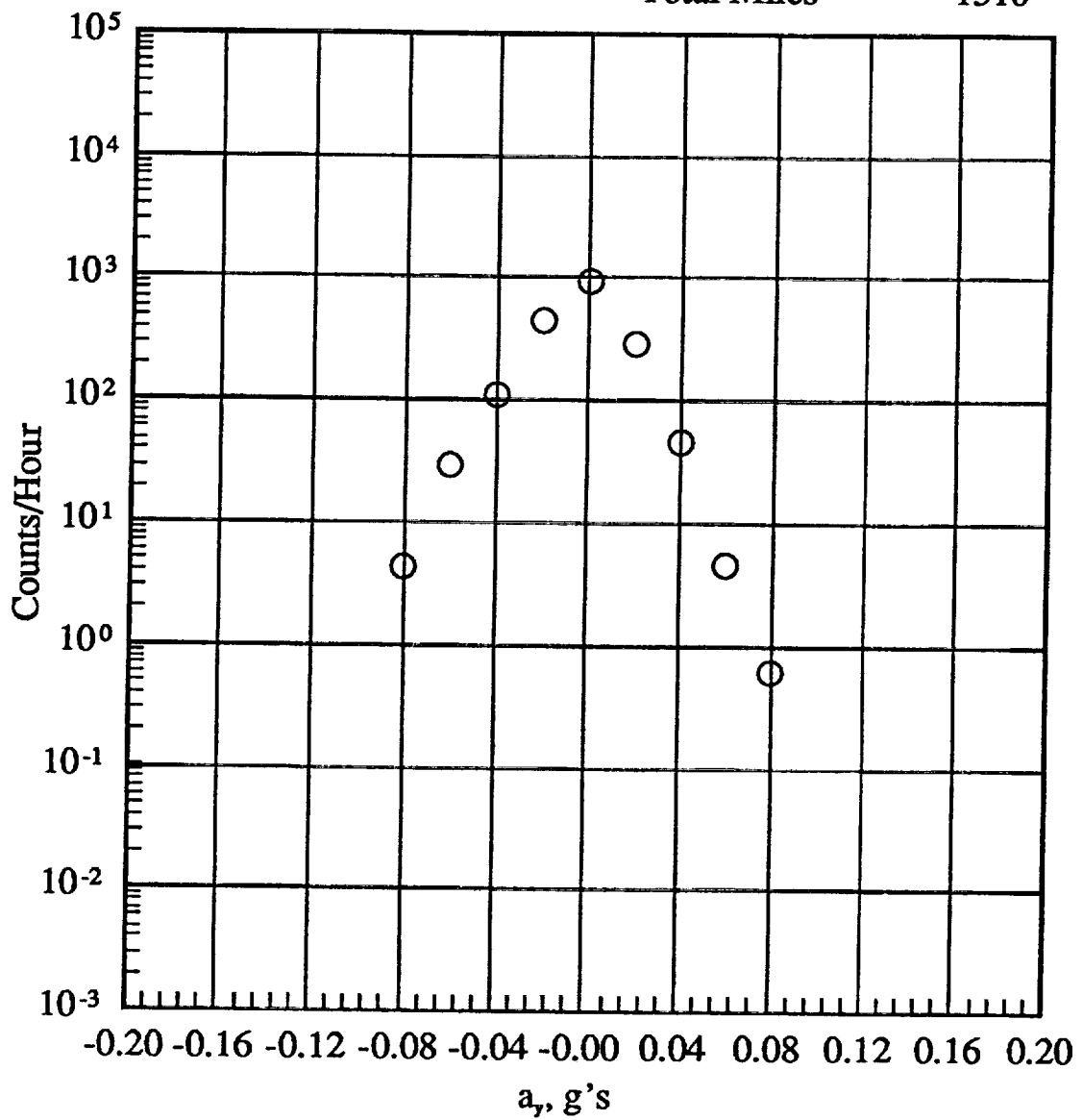


(m)  $a_n$ ,  $a_{nM}$ ,  $a_{nG}$ , -500 to 44500 feet altitude

Figure 22.- Continued.



Total Flights	64
Total Hours	8.25
Total Miles	1510

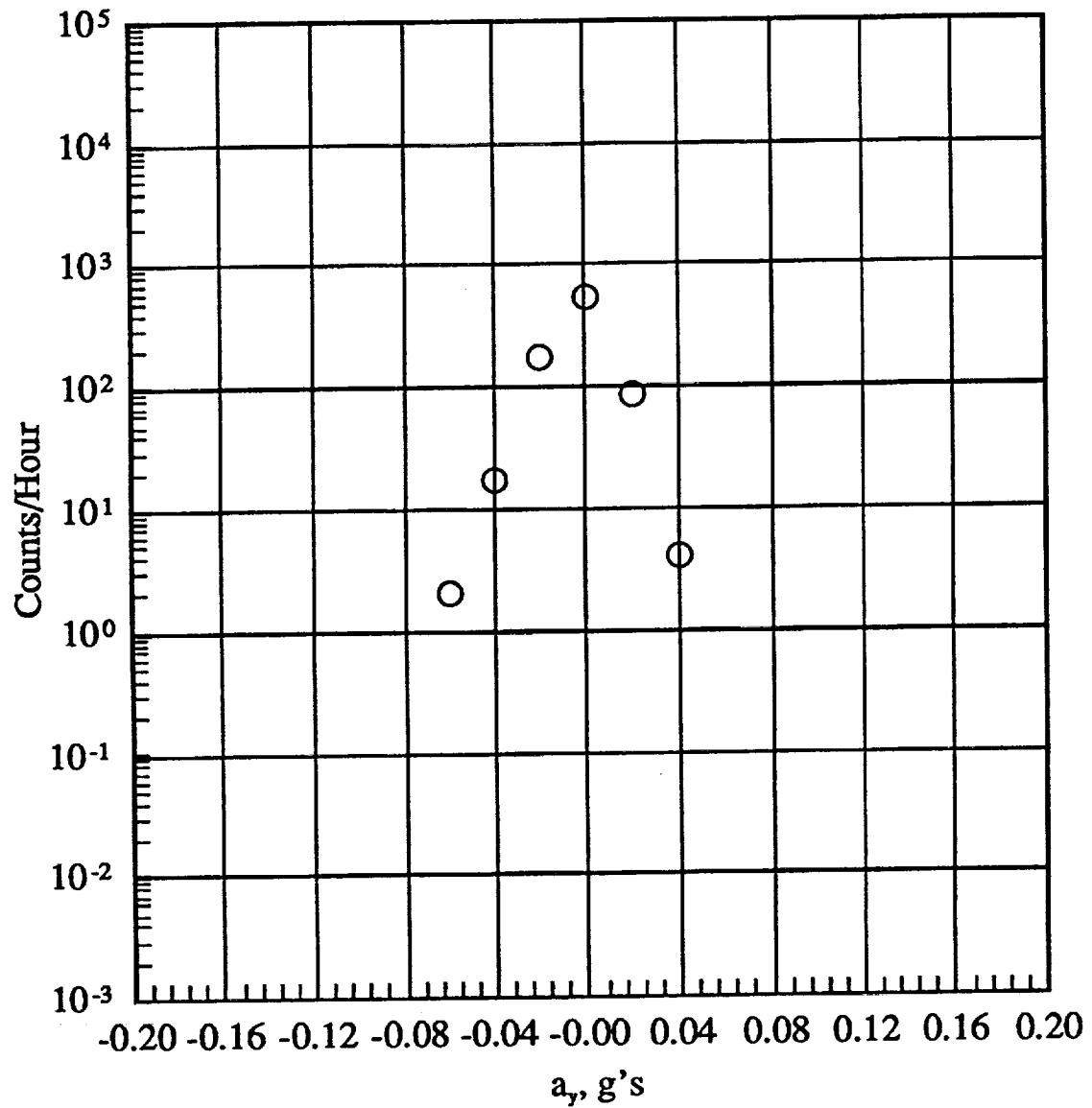


(b) -500 to 4500 feet altitude

Figure 23.- Continued.

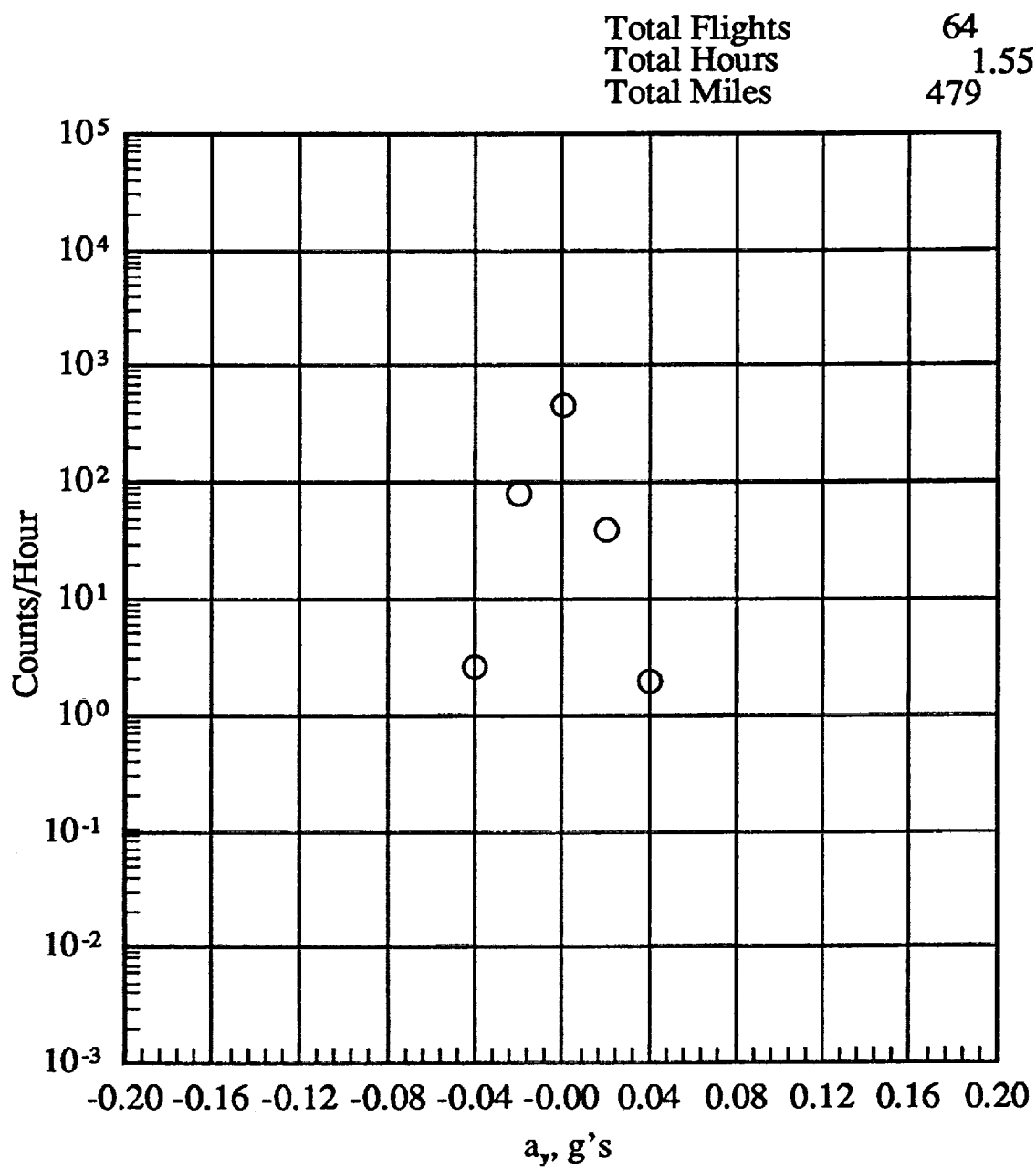
Total Flights  
Total Hours  
Total Miles

64  
1.95  
468



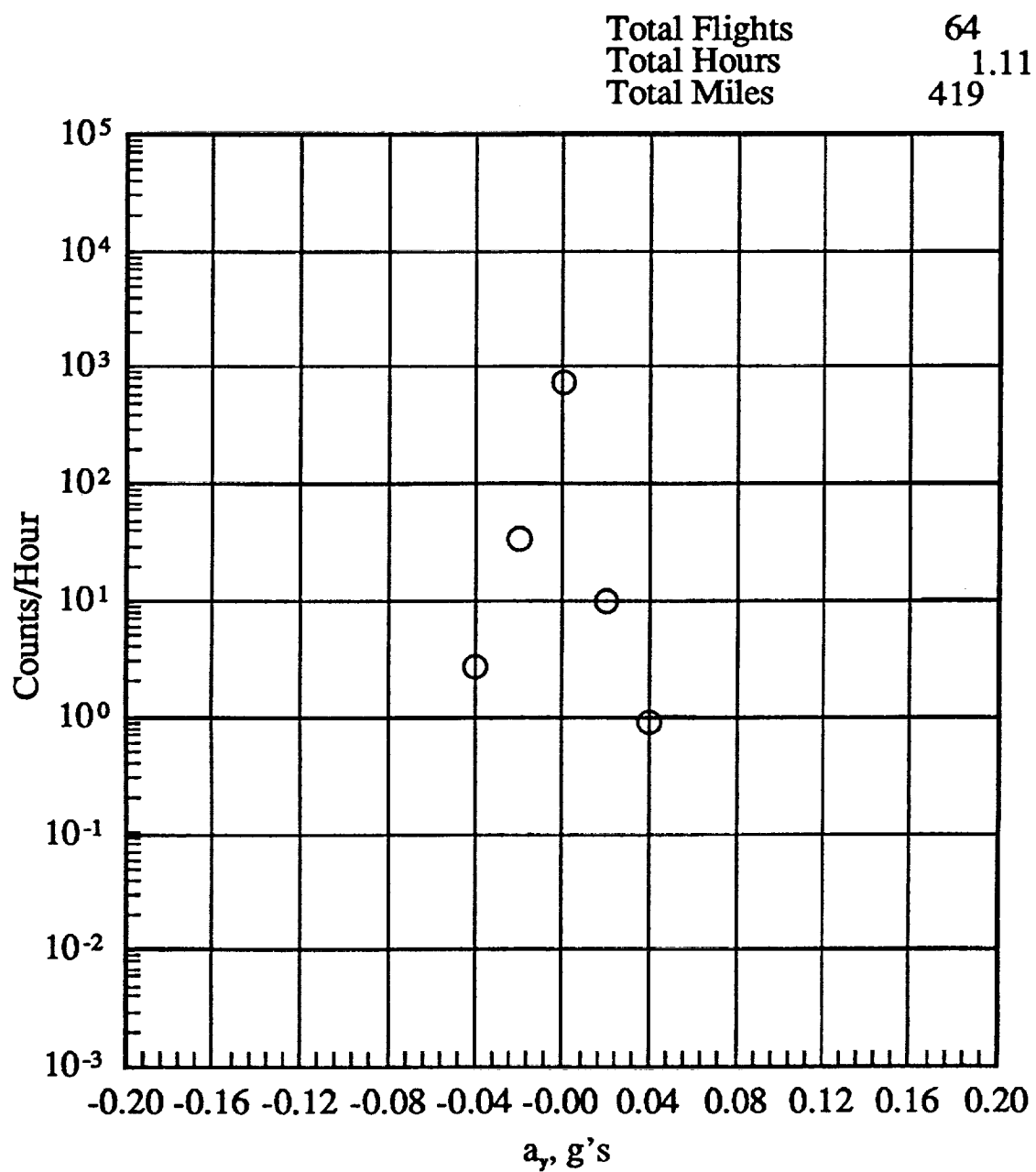
(c) 4500 to 9500 feet altitude

Figure 23.- Continued.



(d) 9500 to 14500 altitude

Figure 23.- Continued.

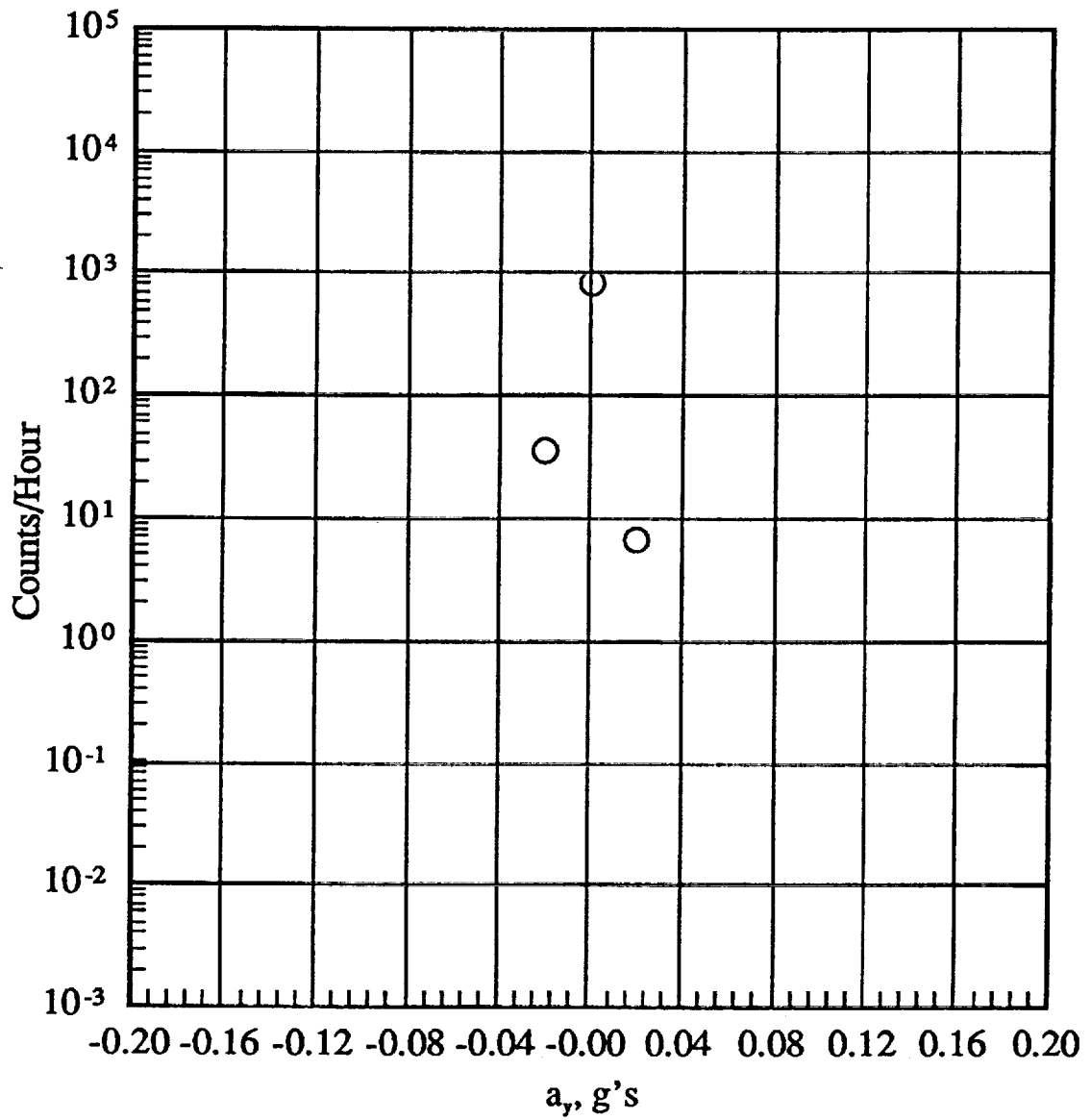


(e) 14500 to 19500 feet altitude

Figure 23.- Continued.

Total Flights  
Total Hours  
Total Miles

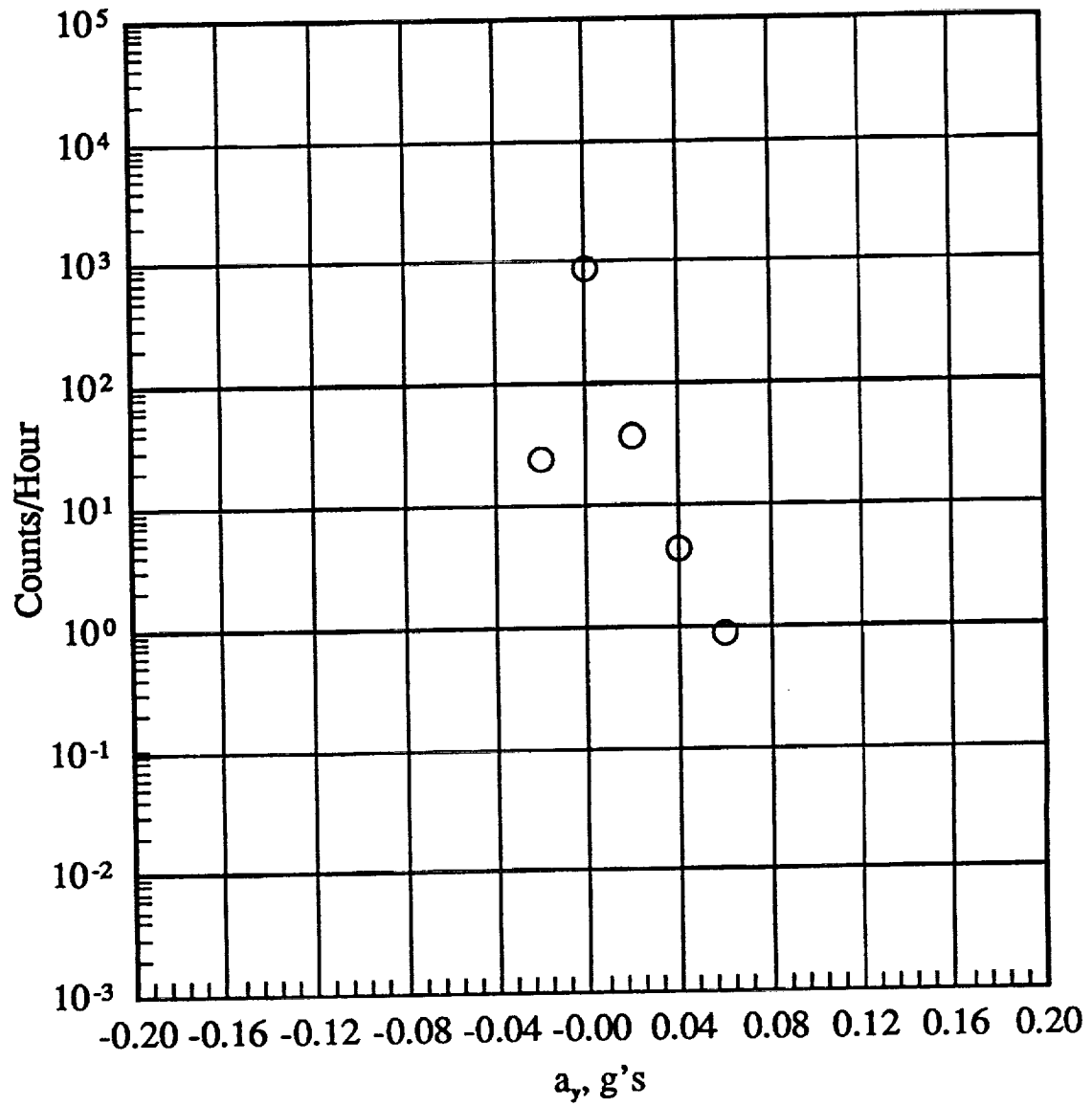
64  
1.93  
771



(f) 19500 to 24500 feet altitude

Figure 23.- Continued.

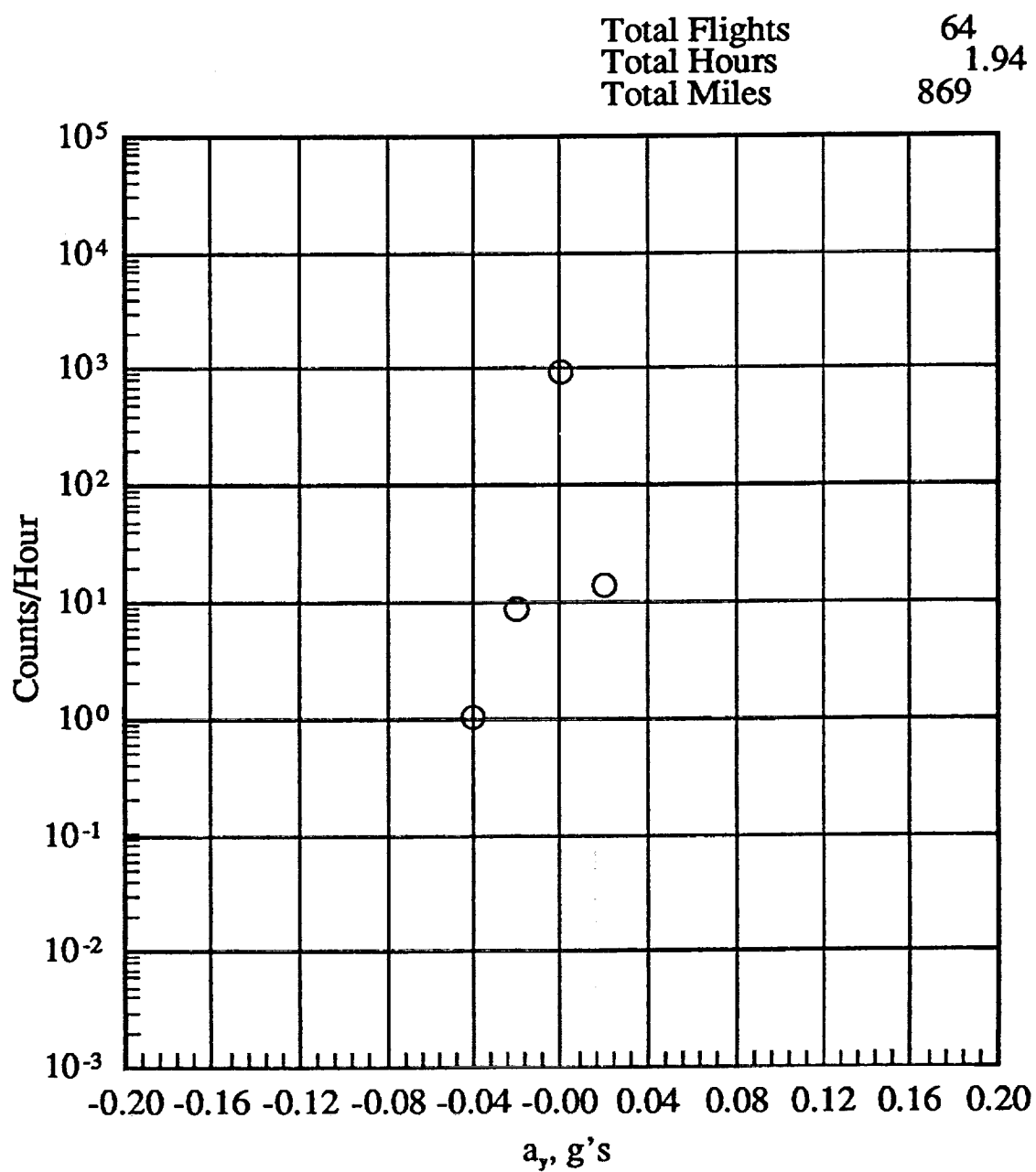
Total Flights	64
Total Hours	1.14
Total Miles	480



(g) 24500 to 29500 feet altitude

Figure 23.- Continued.



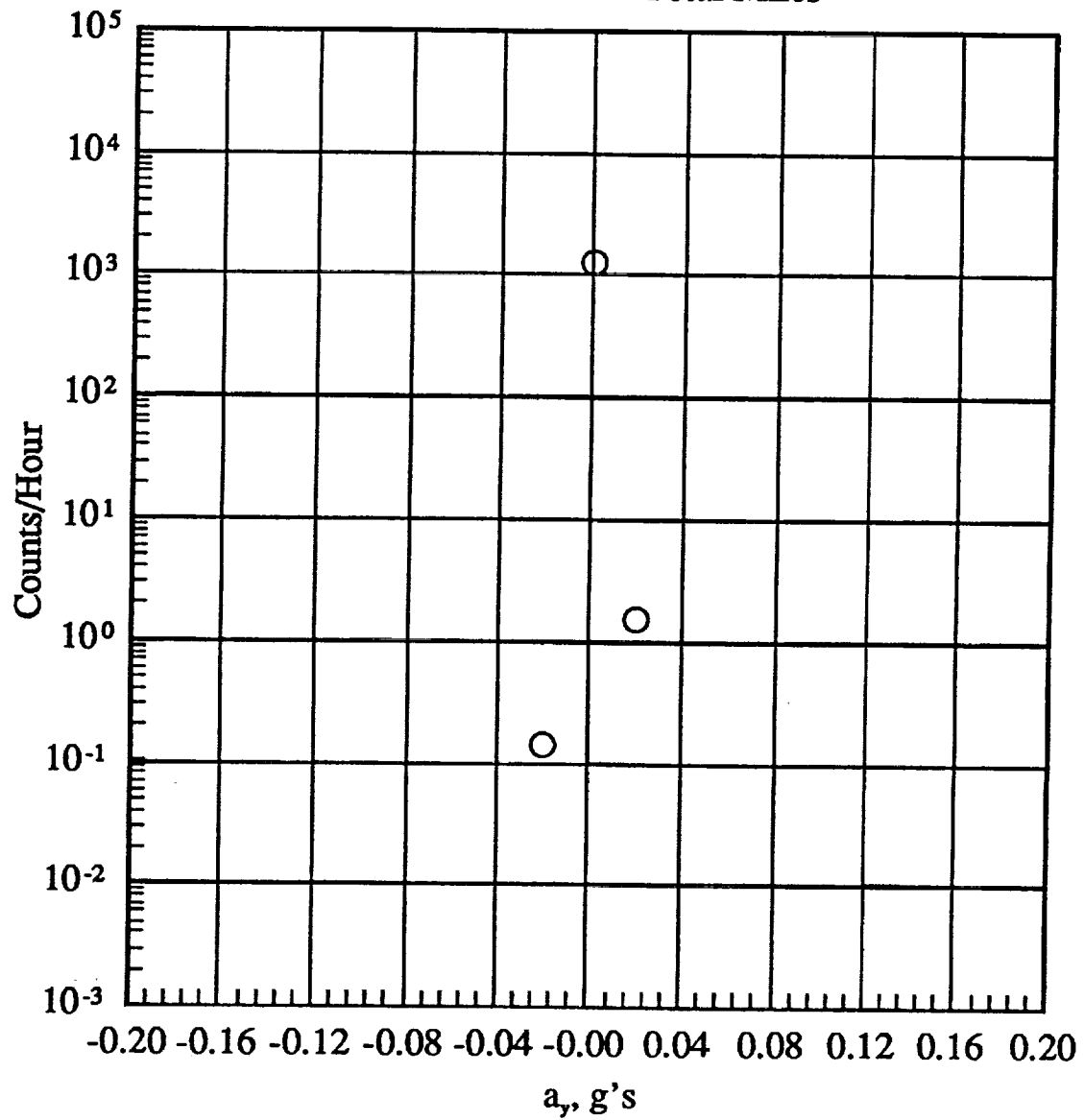


(h) 29500 to 34500 feet altitude

Figure 23.- Continued.

Total Flights  
Total Hours  
Total Miles

64  
7.26  
3264

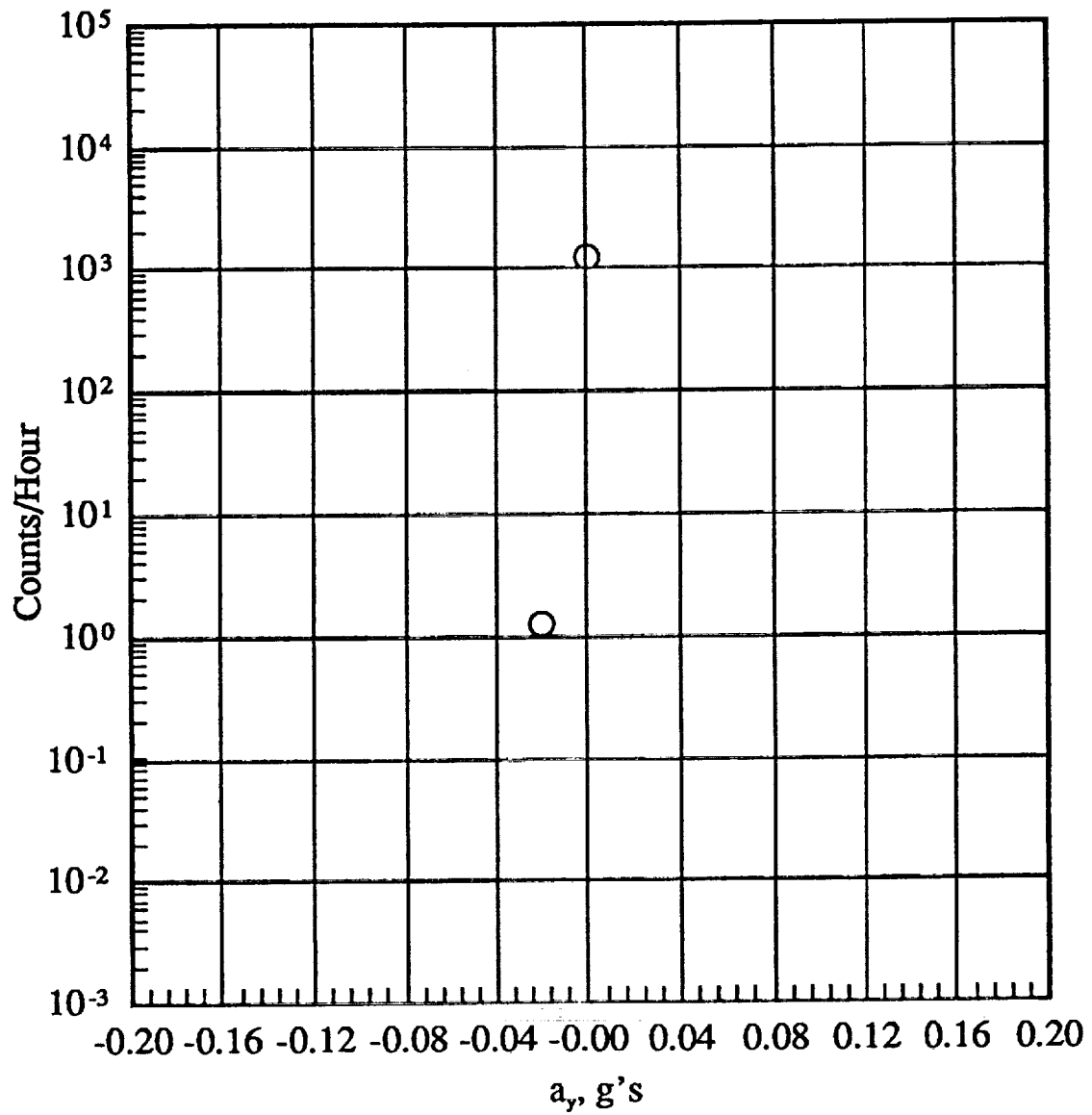


(i) 34500 to 39500 feet altitude

Figure 23.- Continued.

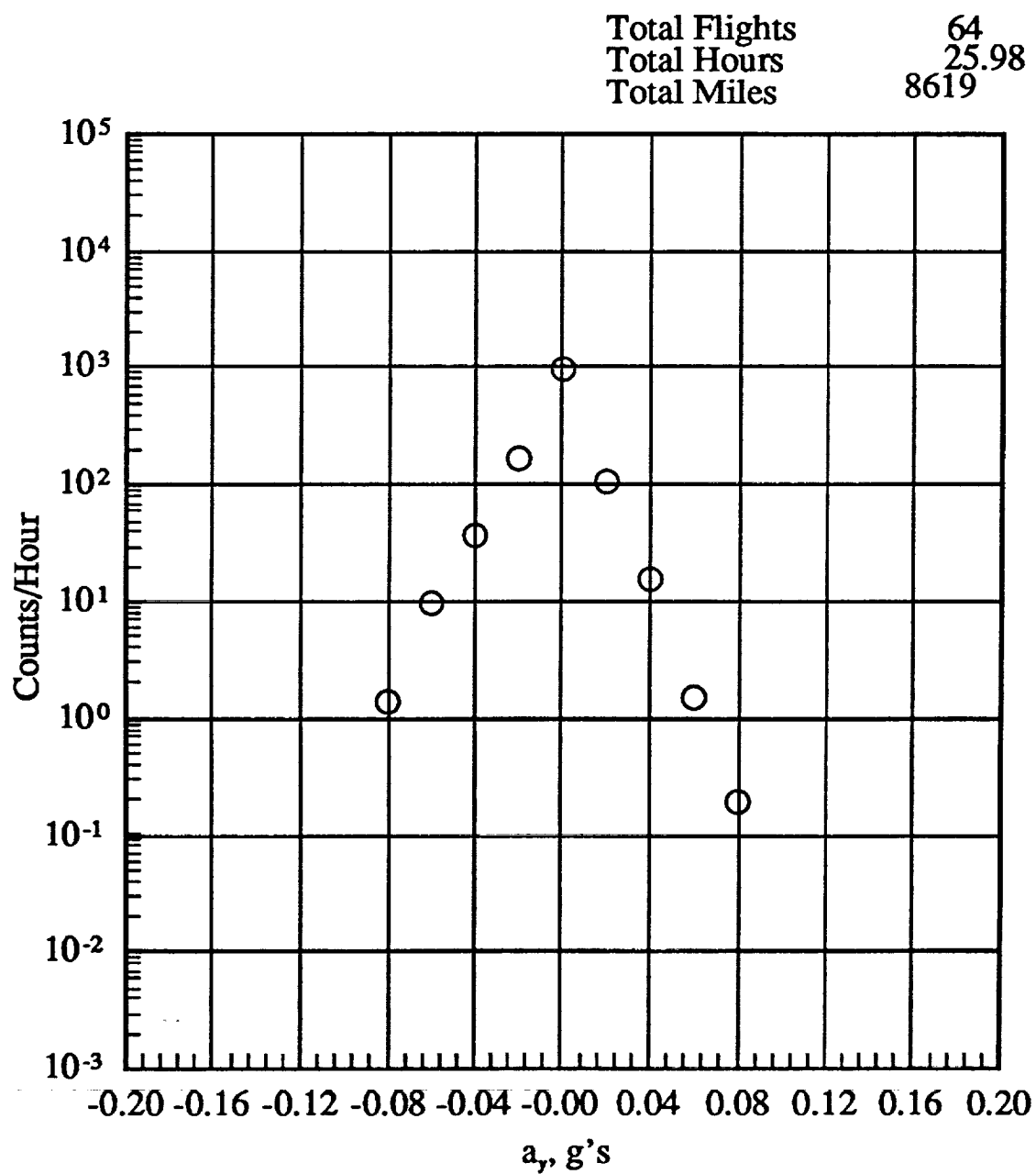
Total Flights  
Total Hours  
Total Miles

64  
358.80



(j) 39500 to 44500 feet altitude

Figure 23.- Continued.



(k) -500 to 44500 feet altitude

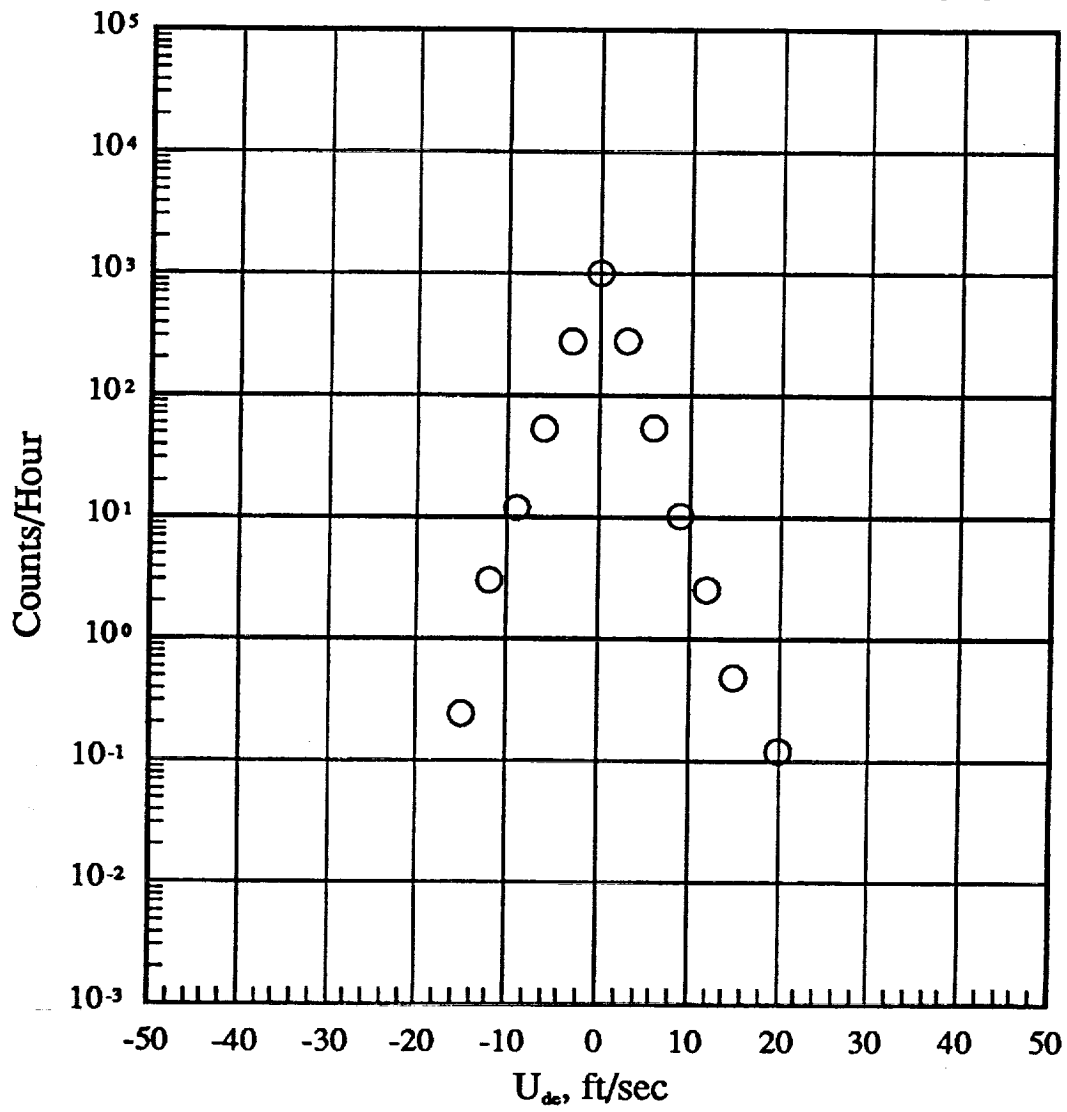
Figure 23.- Concluded.

U <sub>de</sub> DERIVED GUST VELOCITY LEVEL FT/SEC	-500 TO 4500 FT		4500 TO 9500 FT		9500 TO 14500 FT		14500 TO 19500 FT		19500 TO 24500 FT		24500 TO 29500 FT		29500 TO 34500 FT		34500 TO 39500 FT		39500 TO 44500 FT		-500 TO 44500 FT	
	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT	FLIGHT HOURS @ ALT	FLIGHT MILES @ ALT
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	0
15	0.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.15	0
12	2.54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.81	0
9	10.30	0	0.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.32	0
6	53.91	6.14	0.65	0	0.65	0	0.90	0	0	0	0	0	1.03	0	0	0	0	0	17.78	0
3	279.50	52.72	25.88	9.93	25.88	9.93	3.62	0	5.25	6.70	0	0	6.70	0	0.41	0	0	0	96.02	0
0	1005.46	1486.99	1538.98	1278.56	1538.98	1278.56	1713.08	0	1645.66	1762.90	0	1598.47	1598.47	0	1598.47	0	0	0	1391.52	0
-3	276.72	59.89	21.35	14.45	21.35	14.45	4.66	0	4.37	5.67	0	0	5.67	0	0.41	0	0	0	95.56	0
-6	53.07	4.61	0.65	0	0.65	0	0	0	0	0	0	0	0.52	0	0	0	0	0	17.31	0
-9	11.99	1.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.89	0
-12	3.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.96	0
-15	0.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.08	0
-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLIGHT HOURS @ ALT	8.25	1.95	1.55	1.11	1.11	1.93	1.93	1.14	1.14	1.94	7.26	0.80	25.93	25.93	64	64	25.93	25.93	8618.85	8618.85
FLIGHT MILES @ ALT	1509.00	468.11	479.05	419.35	419.35	770.93	770.93	480.15	480.15	869.28	3264.04	358.21	8618.85	8618.85	64	64	8618.85	8618.85	64	64
TOTAL FLIGHTS																				
TOTAL FLIGHT HOURS FLAPS UP AND DOWN																				
TOTAL FLIGHT MILES FLAPS UP AND DOWN																				

(a) U<sub>de</sub> Level crossing counts per hour within pressure altitude bands

Figure 24.- U<sub>de</sub> exceedances: Non-revenue flights.

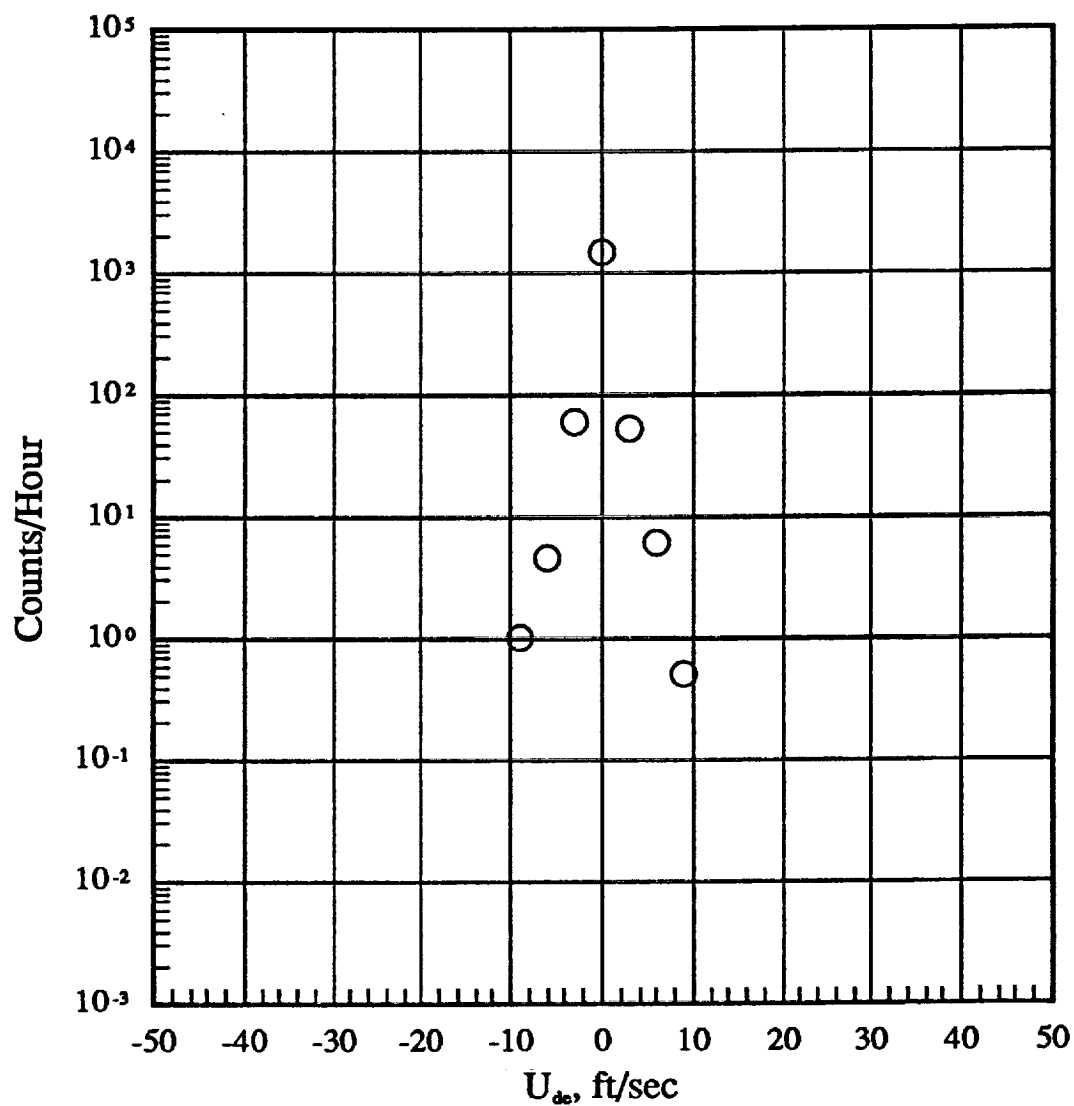
Total Flights	64
Total Hours	8.25
Total Miles	1510



(b) -500 to 4500 feet altitude

Figure 24.- Continued.

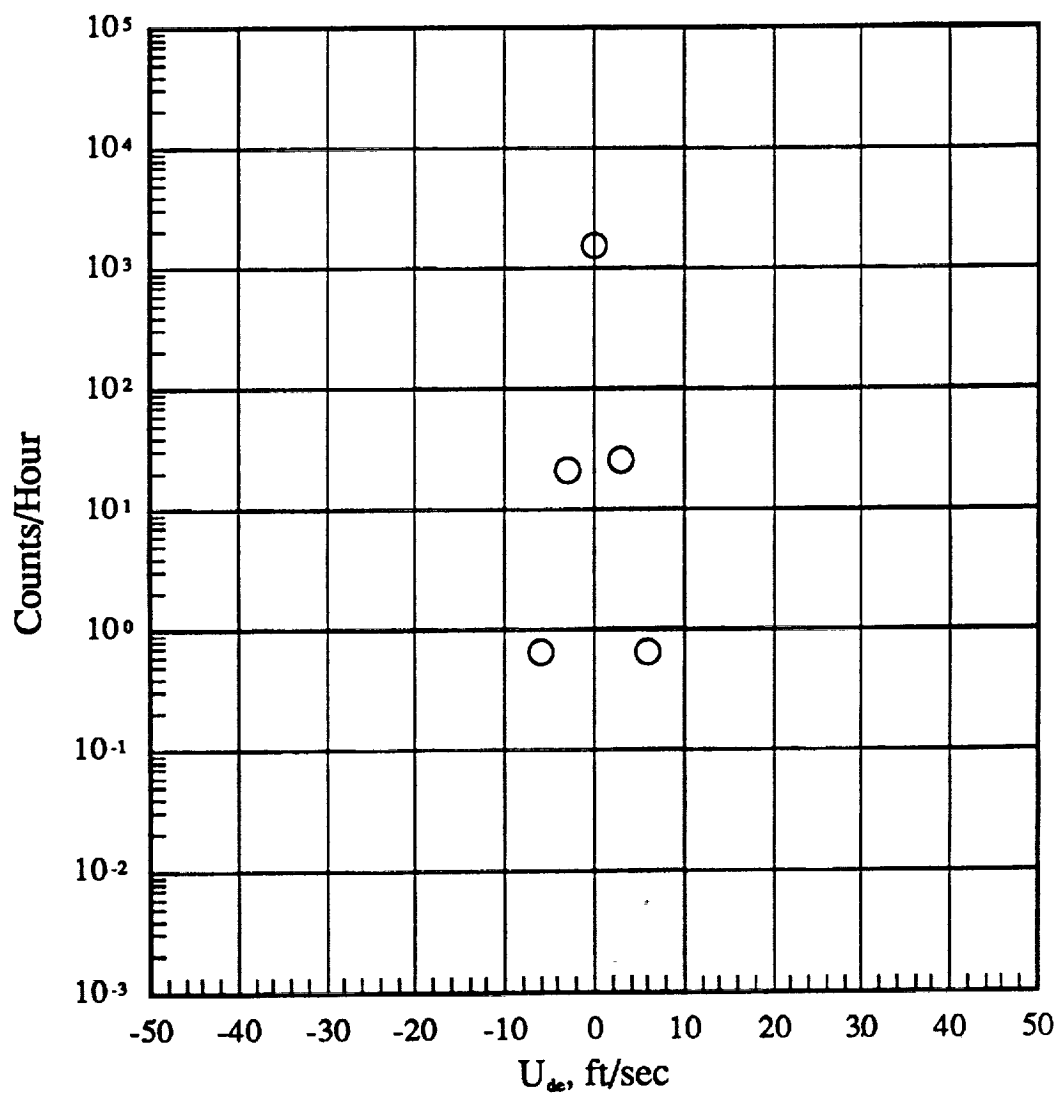
Total Flights	64
Total Hours	1.95
Total Miles	468



(c) 4500 to 9500 feet altitude

Figure 24.- Continued.

Total Flights	64
Total Hours	1.55
Total Miles	479

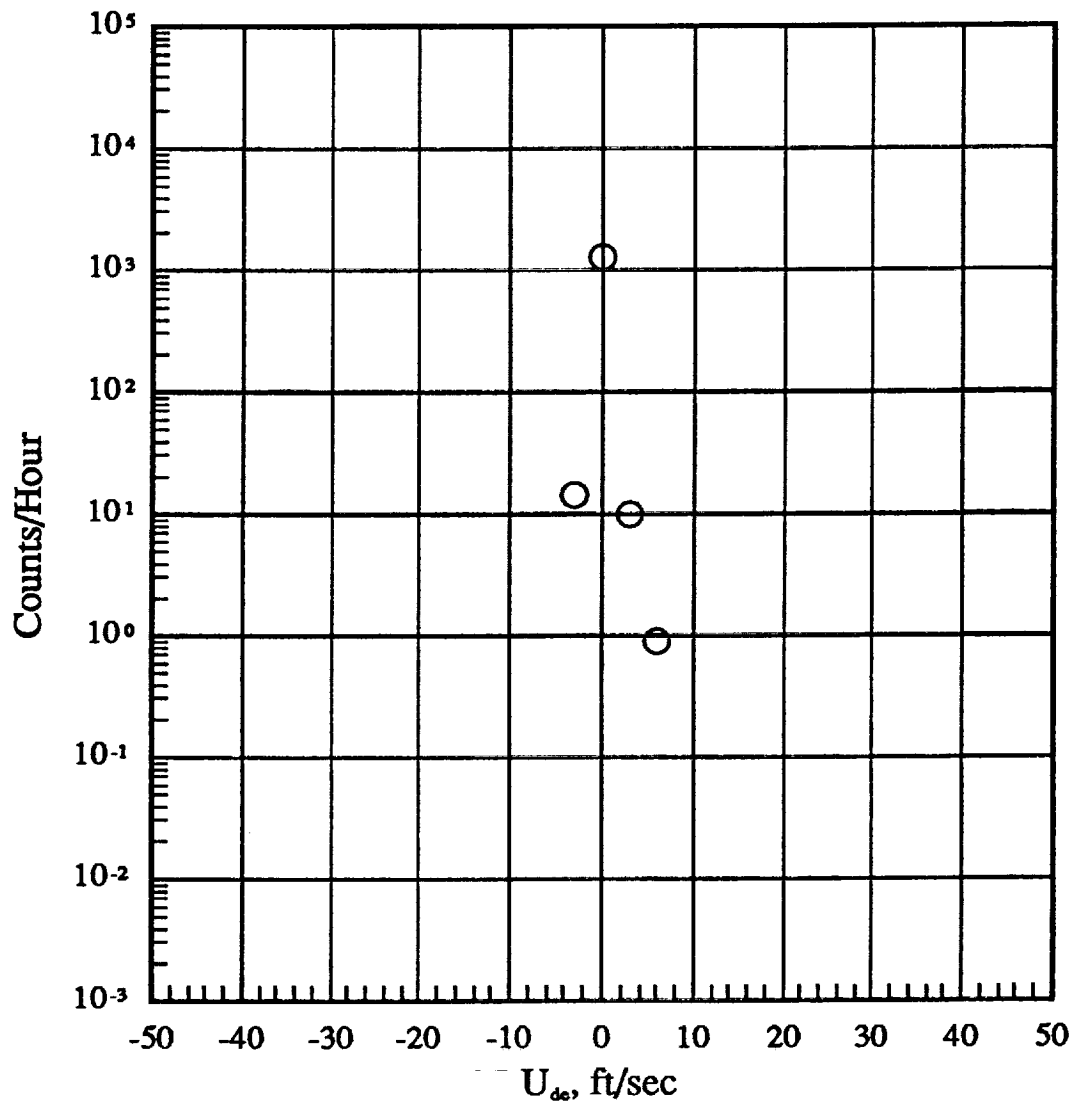


(d) 9500 to 14500 feet altitude

Figure 24.- Continued



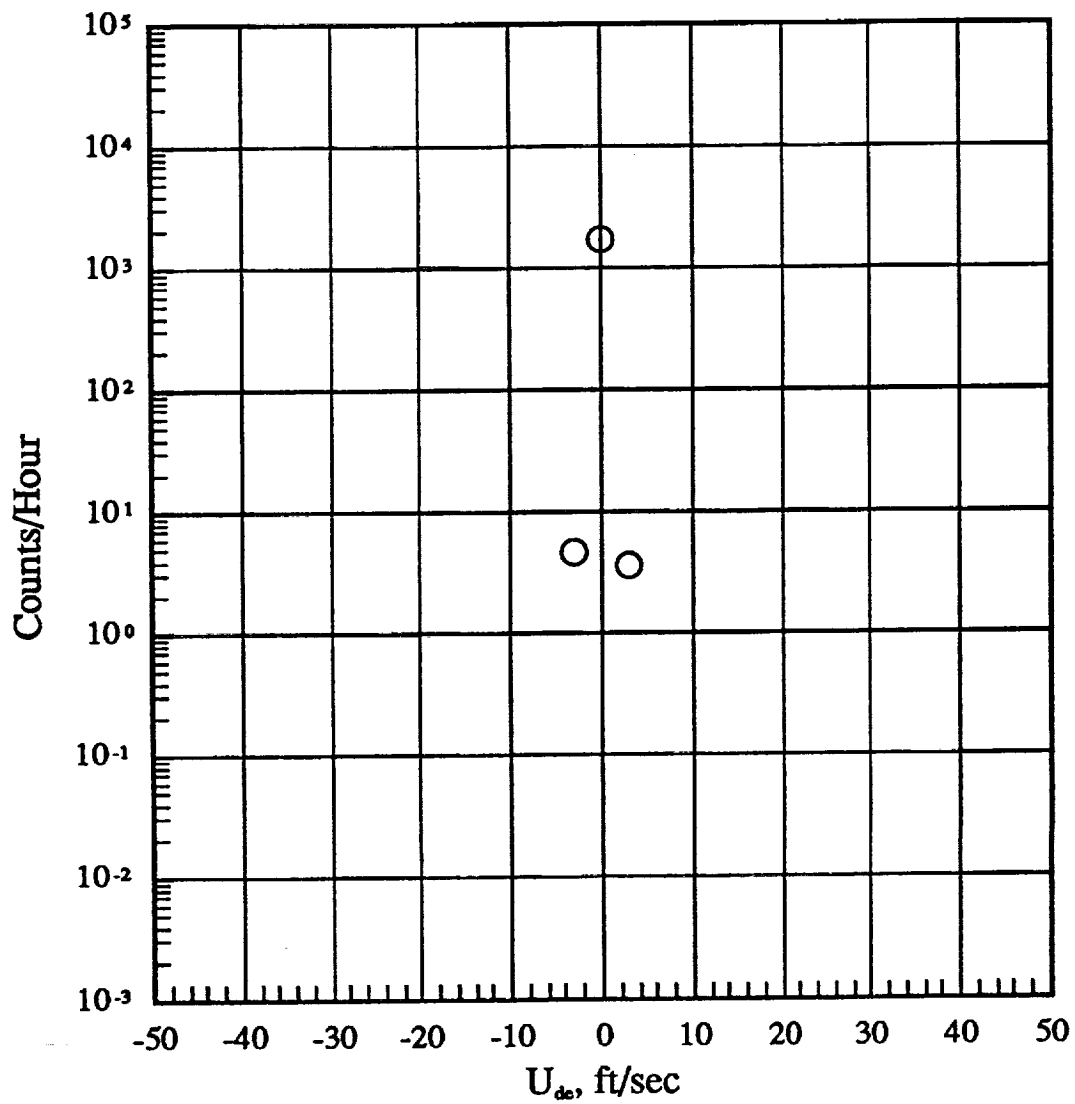
Total Flights	64
Total Hours	1.11
Total Miles	419



(e) 14500 to 19500 feet altitude

Figure 24.- Continued.

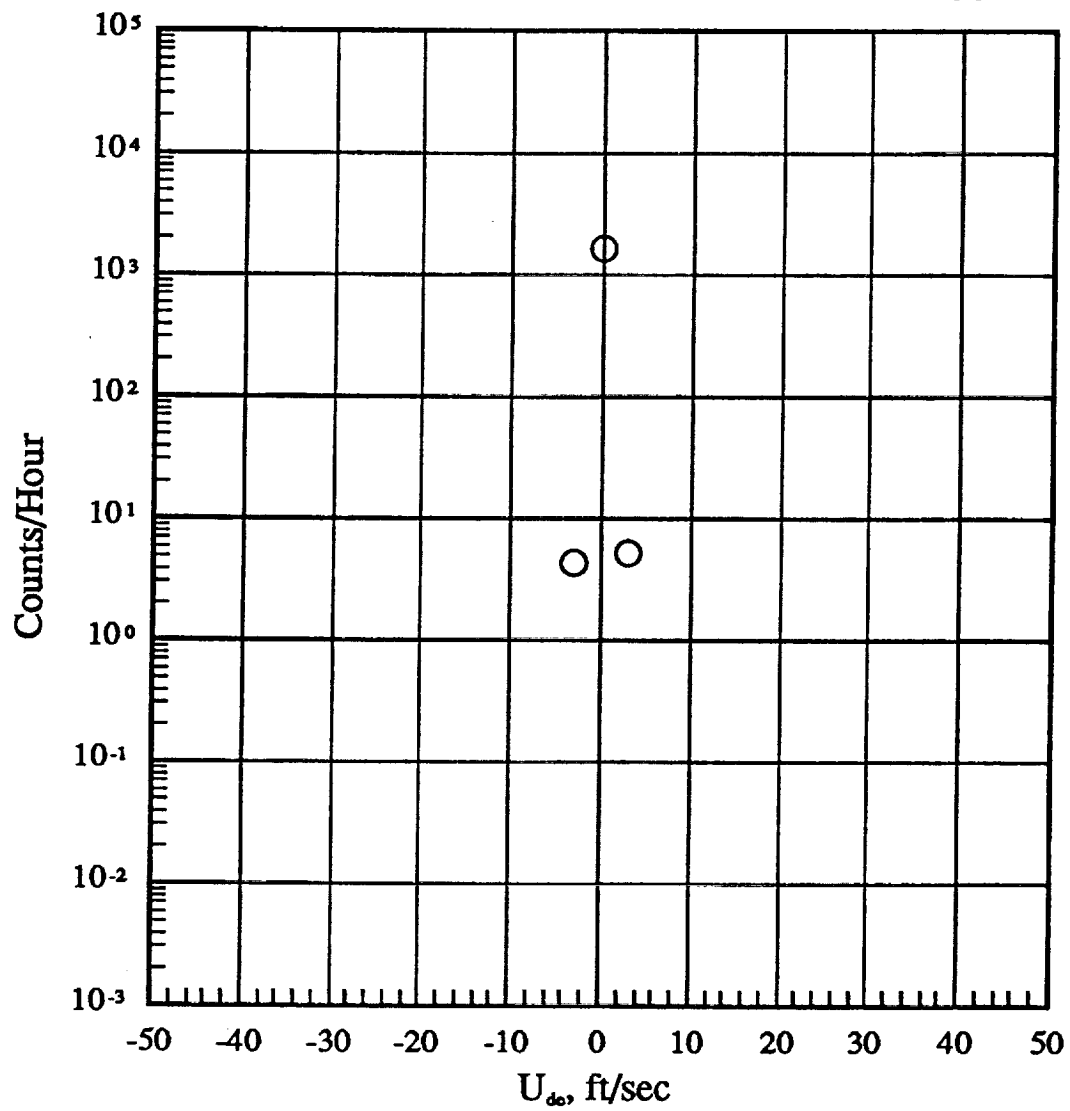
Total Flights	64
Total Hours	1.93
Total Miles	771



(f) 19500 to 24500 feet altitude

Figure 24.- Continued.

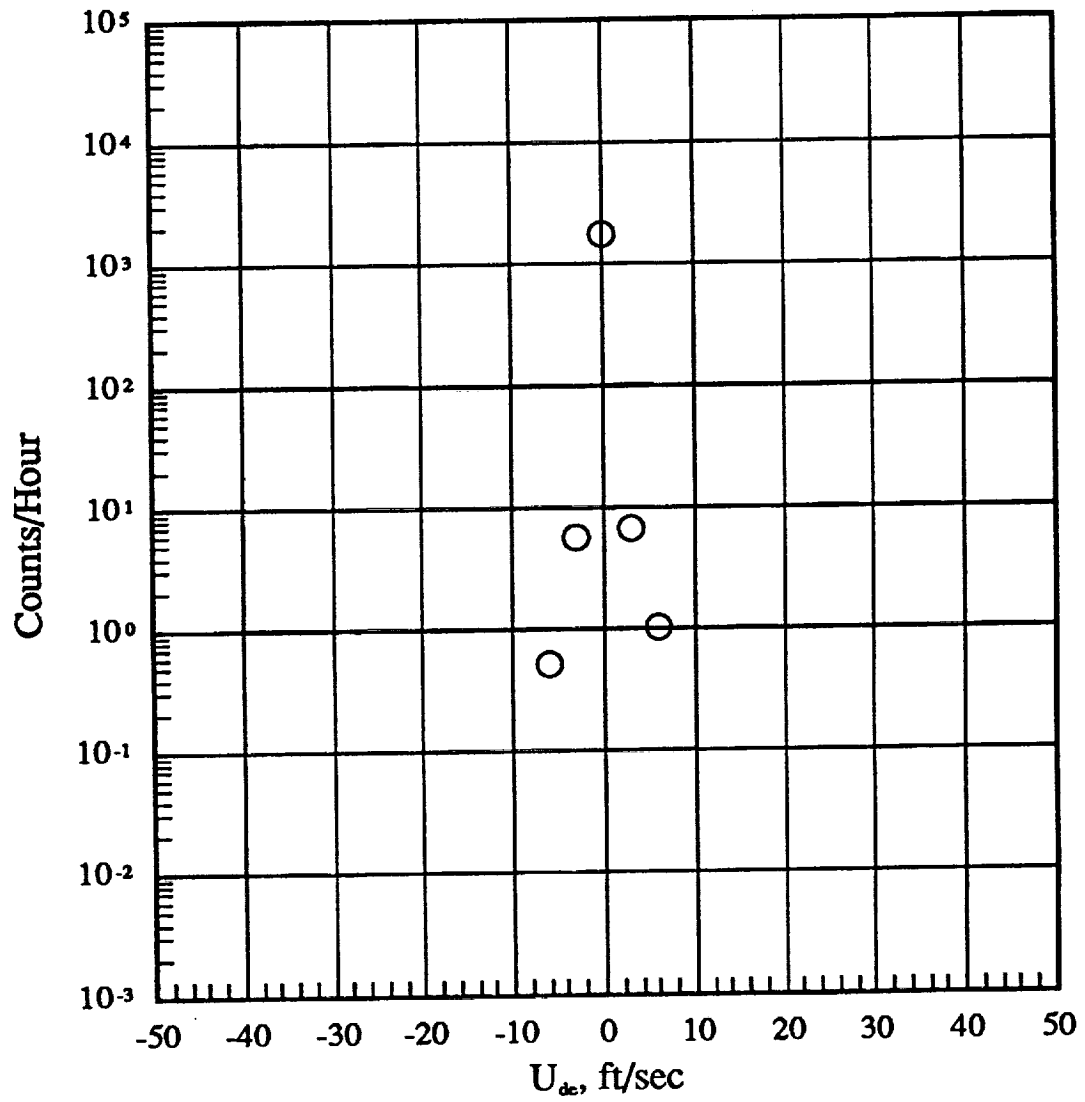
Total Flights	64
Total Hours	1.14
Total Miles	480



(g) 24500 to 29500 feet altitude

Figure 24.- Continued.

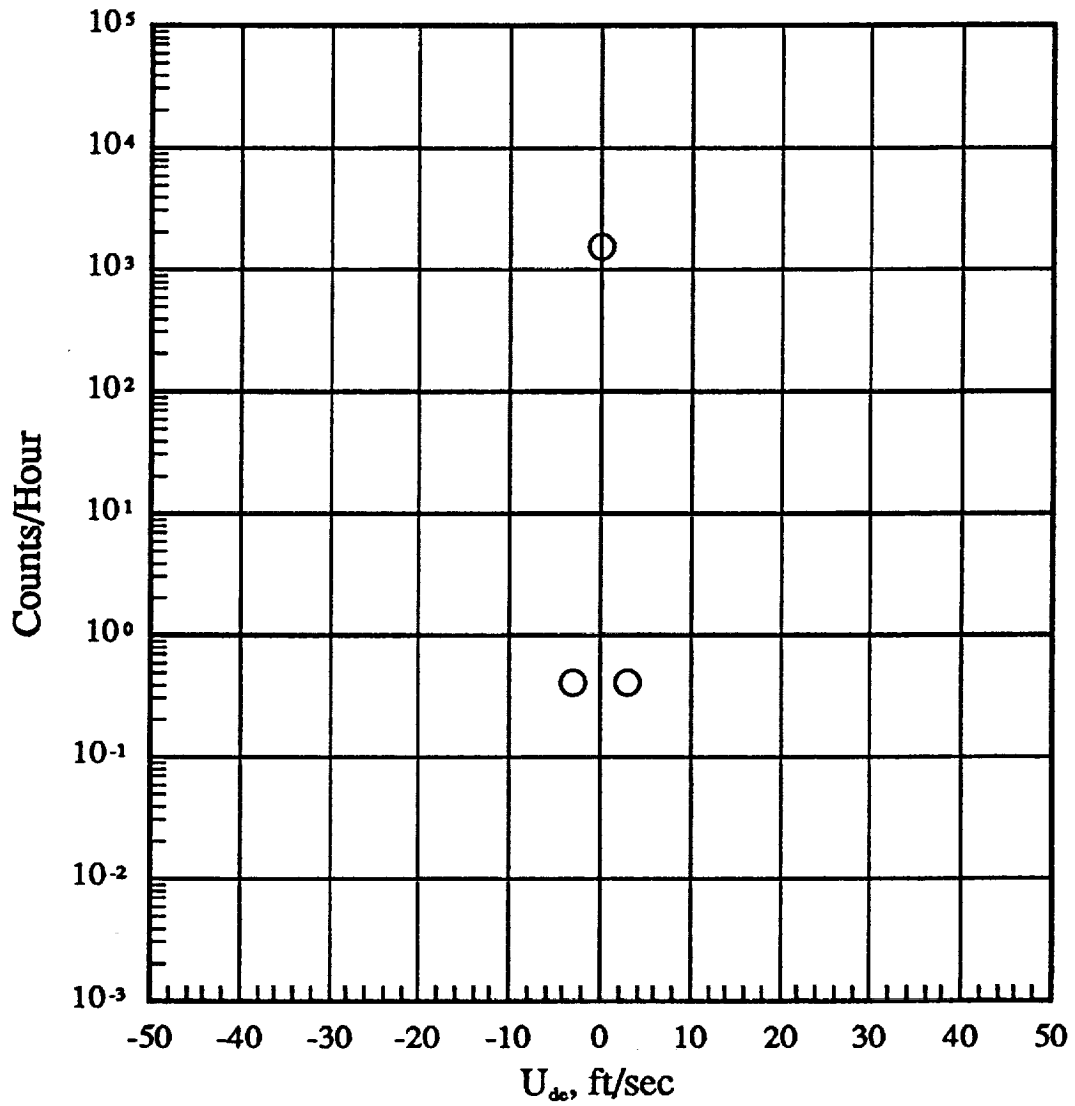
Total Flights	64
Total Hours	1.94
Total Miles	869



(h) 29500 to 34500 feet altitude

Figure 24.- Continued.

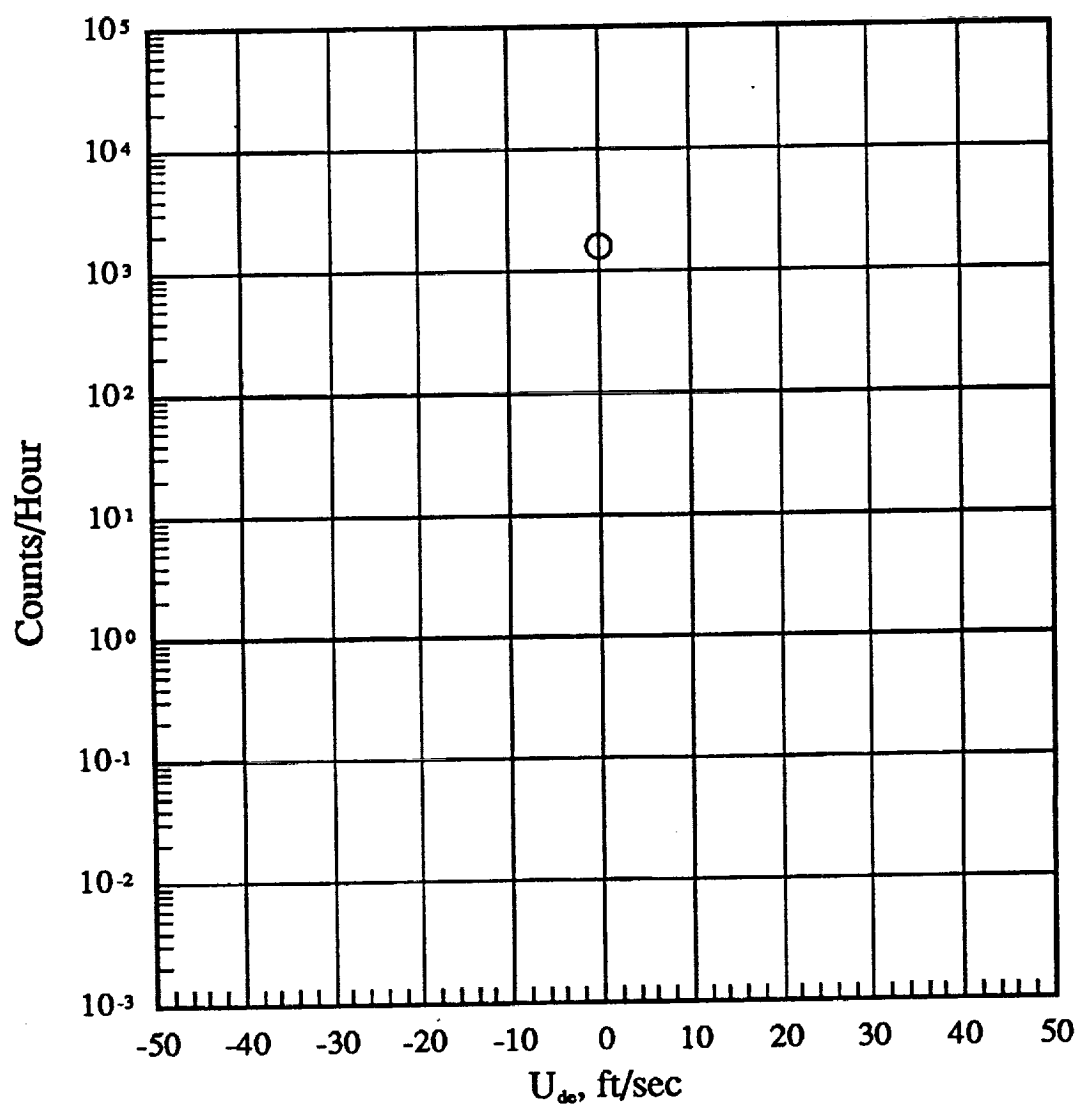
Total Flights 64  
Total Hours 7.26  
Total Miles 3264



(i) 34500 to 39500 feet altitude

Figure 24.- Continued.

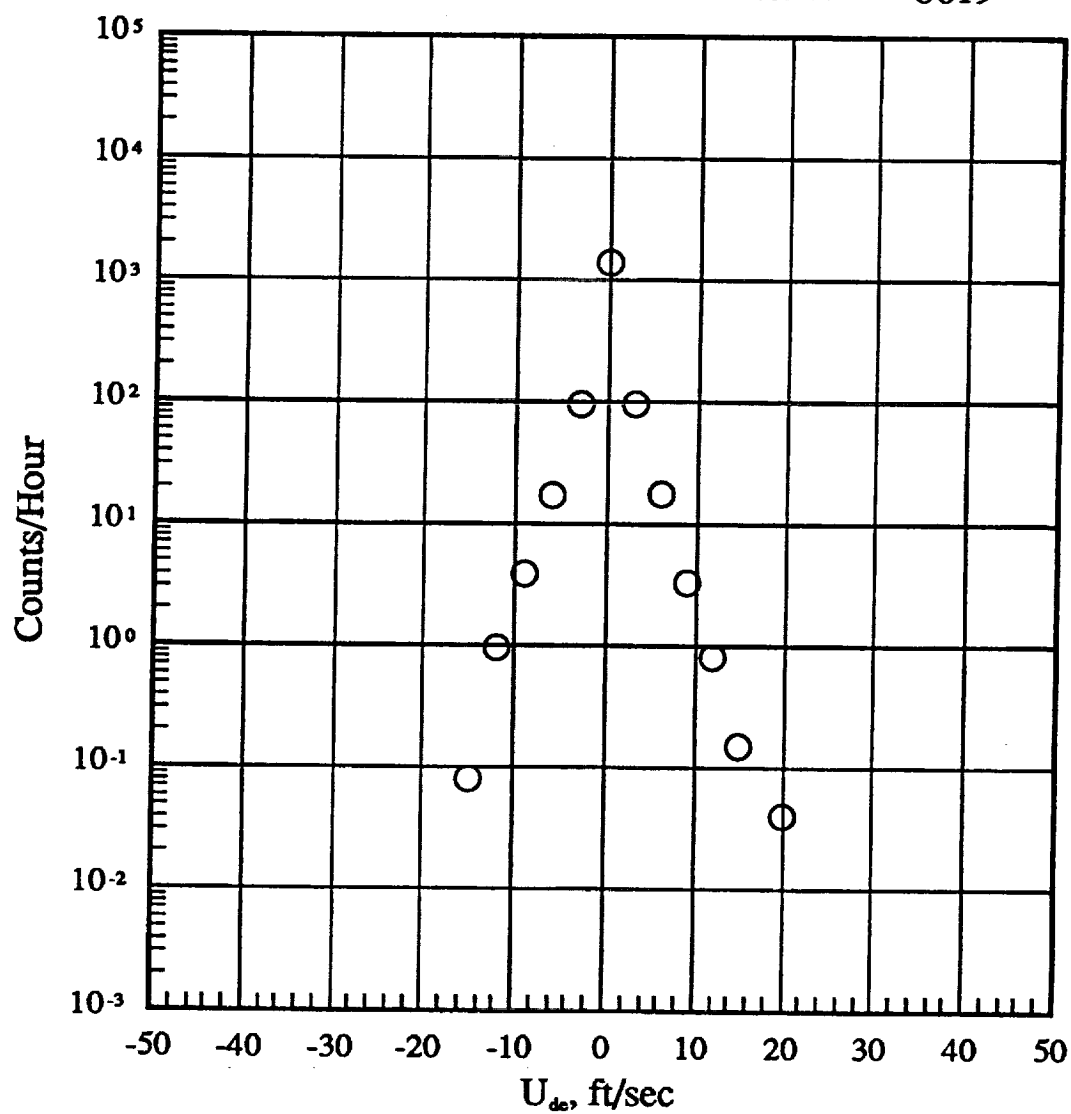
Total Flights	64
Total Hours	358.08
Total Miles	



(j) 39500 to 44500 feet altitude

Figure 24.- Continued.

Total Flights	64
Total Hours	25.98
Total Miles	8619



(k) -500 to 44500 feet altitude

Figure 24.- Concluded.

# DATA FROM 223 HOURS & 146 FLIGHTS

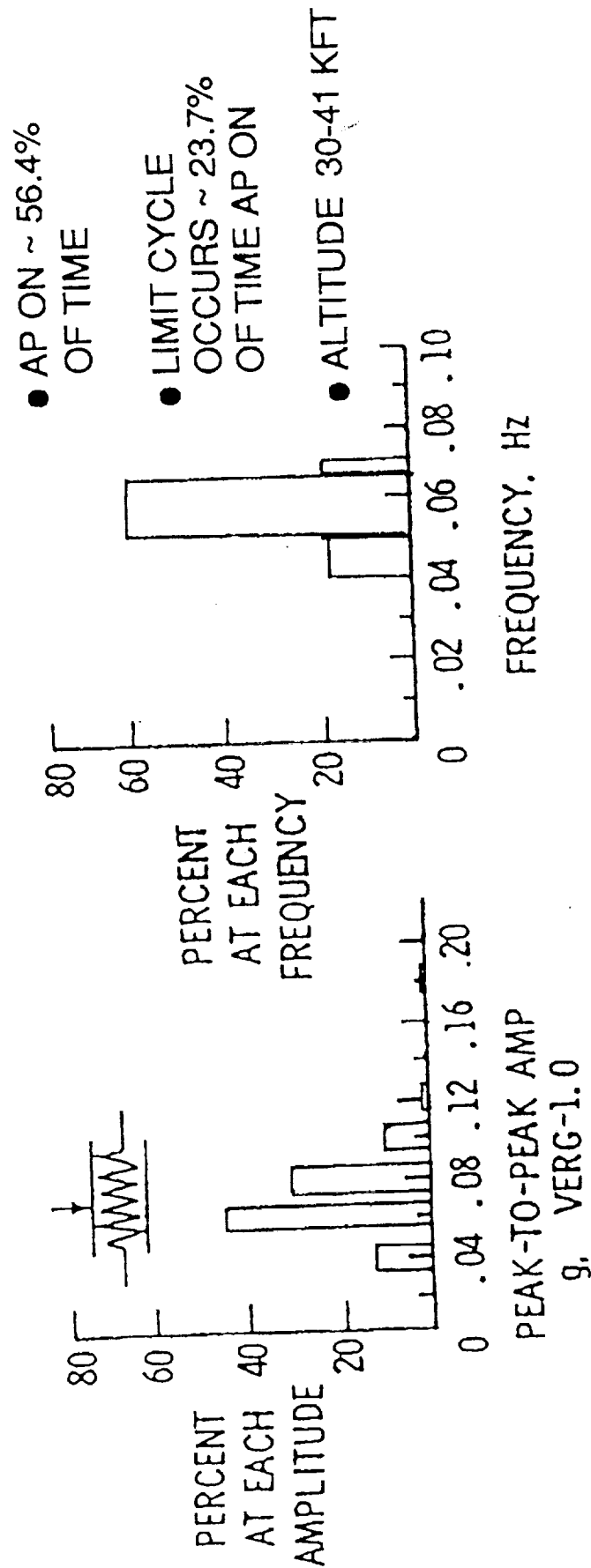


Figure 25.- Autopilot "limit cycle" experience.



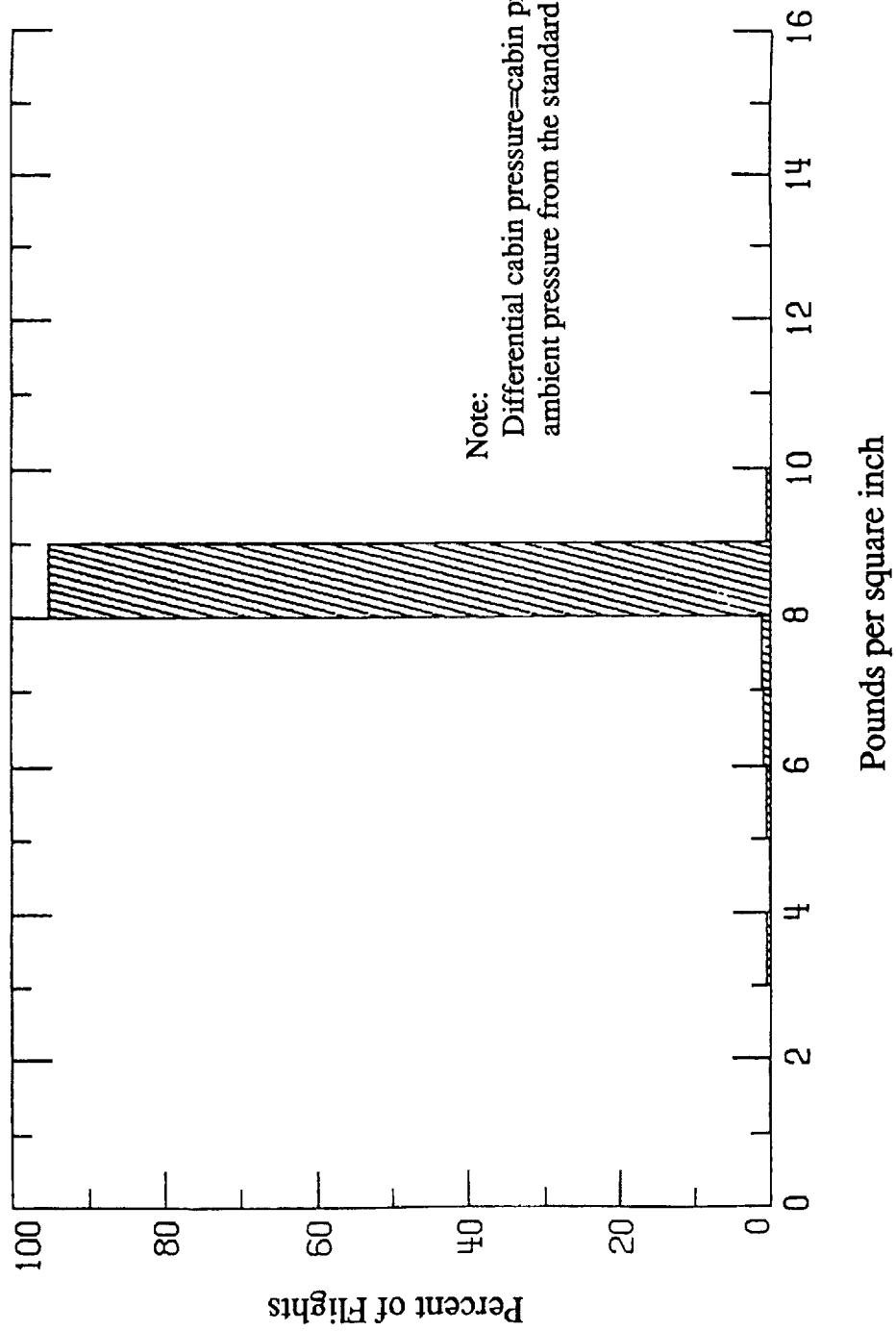


Figure 26.- Maximum differential cabin pressure per flight; Percent of flights.



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